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69

POVERTY,
DEVELOPMENT,
AND HEALTH POLICY



WORLD HEALTH ORGANIZATION
GENEVA

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POVERTY, DEVELOPMENT, AND HEALTH POLICY

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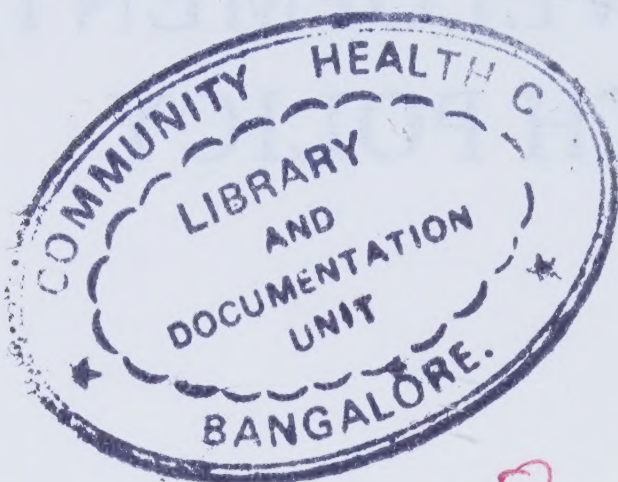


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INTRODUCTION

At the Twenty-ninth World Health Assembly in May 1976, the Director-General was requested "to take appropriate steps to ensure that WHO takes an active part, jointly with other international agencies, in supporting national planning of rural development aimed at the relief of poverty and the improvement of the quality of life".¹

This book is written primarily for senior health administrators and teachers of health personnel in developing countries. It has two purposes. The first is to show the role that the senior health administrator can play, with others, in reorienting national planning in the directions indicated by the World Health Assembly. The second is to show some of the implications for the planning and administration of health services.

Health standards are an important part of the quality of life, and the improvement of health is an essential element of socioeconomic development. In the past, the role of many health administrators in national planning has been restricted to advocating the case for health services and attempting to maximize the share of national resources allocated to the services under their control. While health services, geared towards objectives which are carefully selected, can play an important part in improving health standards, they cannot do it alone. Health-improving activities range much wider than the provision of health services.

As poverty is a major cause of low health standards, the health administrator needs to participate in plans to combat poverty and to identify those aspects of poverty that are of special importance for the

¹ WHO Handbook of resolutions and decisions. Volume II, second edition, 1977, p. 21 (resolution WHA 29.74).

health of the population. For example, nutritional standards are critical for health. The health administrator can identify the dietary deficiencies of the population and press for action to remedy them. The action needed may include changes in the system of land tenure or in the distribution of the ownership of land, changes in what crops are grown or what animals are raised, in how food is marketed and transported, and in the help given to different types of farmer.

The health administrator will be concerned about any aspect of a national plan that may have an unfavourable impact on health standards such as the creation of open irrigation systems or the further concentration of the population in urban settlements. He will press for changes in the plan to prevent unfavourable effects on health or for measures to counteract such effects or to limit their impact. He will be concerned with the effect of the plan on the distribution of income — whether through tax policies, changes in the extent of employment or underemployment, or policies that may help some producers at the expense of others. There are many ways in which plans to secure economic growth can have the effect of making the poor poorer.

National planning is conducted within an economic framework and makes use of economic statistics. If the health administrator is to play his full part in national planning, he needs some knowledge of economic reasoning and of the main economic concepts used in planning. This is necessary both to see the role of health services in the total plan and to act as spokesman for health policy within it. If he is handicapped in his participation by unfamiliarity with economic concepts and reasoning, the health implications of a plan may be given insufficient attention. Therefore this book includes a brief explanation of the economic framework used for national planning.

A national plan shows how it is intended that the nation's resources should be used in future years. The provision of health services uses resources, including imports and highly educated manpower, which might alternatively have been used in other sectors of development, such as education, transport, or the production of goods. Where health services are financed out of taxation, this tax money might alternatively have been used to finance other types of services or development activity. The resources available to a nation are limited, and resources used in investment — whether in the construction of buildings, the purchase of machinery, or the training of manpower — are not available for current consumption. The plan for health services must form part of the wider plan for the use of the whole nation's resources.

The second part of the book shows some of the implications for the planning and administration of health services. Tools of economic analysis can be used to find ways of achieving health service objectives

with less use of resources or of obtaining better results from the same quantity of resources. They can help health administrators to examine the merits of new ways of delivering health services. They can lead to the selection of ways of providing services that are most appropriate to the economy in which they are working or to the geographical area in which services are being provided. New patterns of services may be needed to reach the poor in rural areas. Economics can help the health administrator to find the most *efficient* means of planning health improvements.

Economic classification can be used to marshal information and help health administrators choose between different costed programmes and different ways of securing particular health objectives. Analyses should regularly be made of the existing use of health resources. How much is currently being spent on cure and prevention, on training and research? How are these expenditures distributed geographically? What proportion of the urban and rural population makes contact with particular services or benefits from their activity? The administrator can assess what lasting health improvements are likely to result from particular services. This can help in planning for the longer term when capital programmes can be completed and the benefits of new training programmes realized.

Health services are provided by people, who respond to incentives of many different kinds — including economic incentives. Economic analysis can be used to construct appropriate incentives throughout the system to help achieve desired objectives. For example, if trained personnel are reluctant to work in rural areas, higher remuneration, good housing and other amenities can be provided as a means of inducing them to do so. At the very least, economic incentives should not be allowed to pull in the reverse direction. What is important is the total economic incentive. For example, if health workers engage in private practice and this is available only in urban areas on any scale, the pay offered in rural areas would need to counteract this advantage.

Economic incentives also operate on the producers of goods. Is there an economic incentive for producers to make goods for health services? Is there sufficient competition between producers of such goods to ensure that the prices paid provide no more than a fair return to the producers? Are purchasers of these goods well informed about what they are buying, of the many different sources of supply, and of the prices quoted? Have doctors, for example, the incentive to use the resources they command to maximum advantage? How far does the pursuit of profit by a company or an individual promote or obstruct the efficient use of health resources and help to secure equitable distribution?

Pricing can be used to direct users away from some services and towards others. One function of prices is to provide revenue for an organ-

ized health service or to pay a practitioner for services, or a producer for making goods (e.g., drugs). But a second function is to ration services among users — to act as a signal that one purchase is more attractive than another. For example, if out-of-hospital services were free and charges were made for hospital services, the patient would be anxious to be treated out of hospital if this was at all possible.

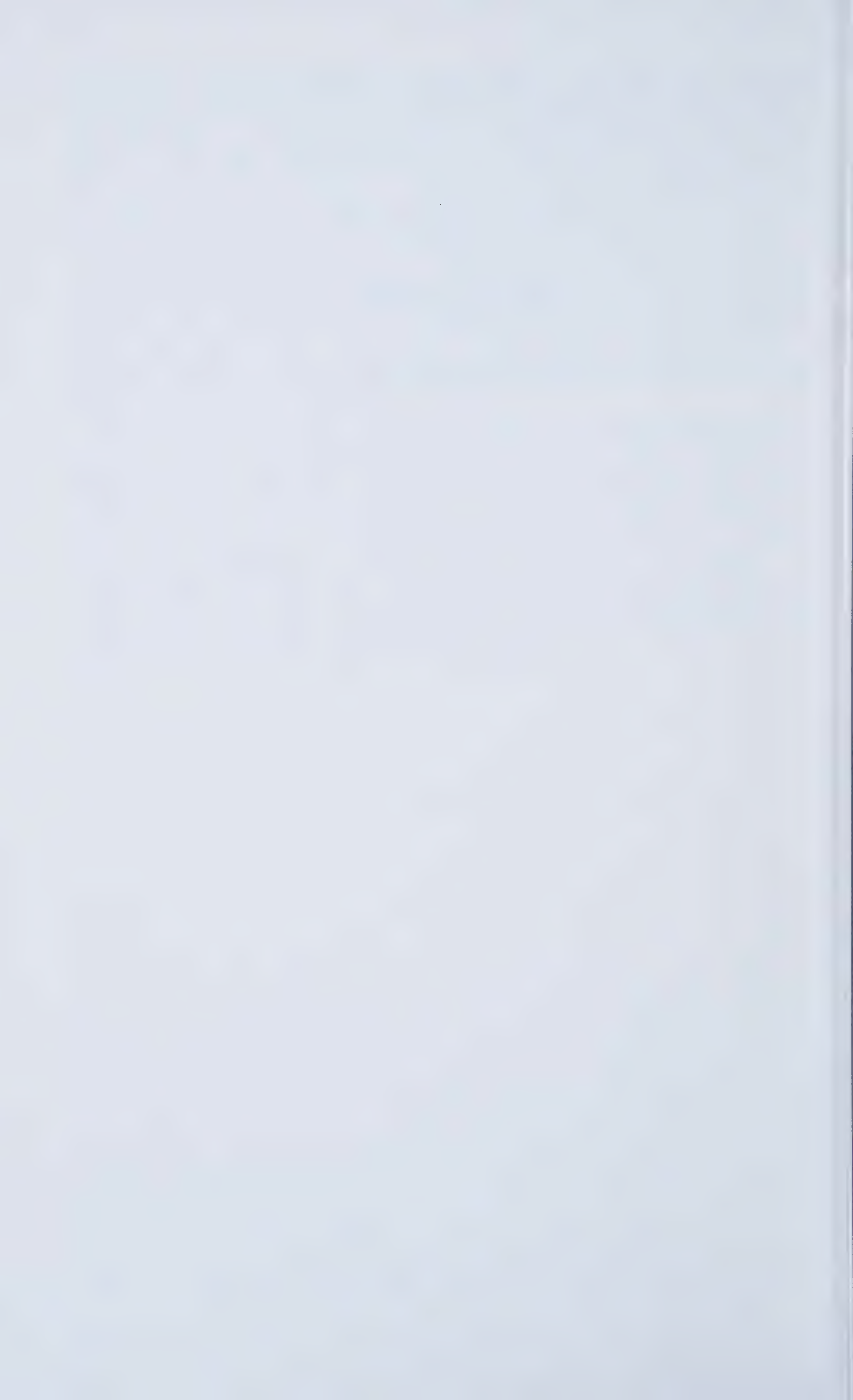
Thus economics is a tool of management. It encourages the planner to compare inputs with outputs — i.e., the resources with the benefits, whether they can be expressed in monetary terms or not and to consider where he would derive the greatest benefit from the deployment of further resources and where he would lose the least benefit from the deployment of fewer resources.

This is not a textbook on health economics or on national planning. A much more comprehensive and technical book would be needed for either of those purposes. The material included has been selected to provide readers with no more than a working knowledge of these subjects. The material is presented with the minimum use of economic terminology. Technical terms are explained as they are introduced.

The book is arranged in two parts. The first part is concerned with health policy and national planning. The second part is devoted to the role of health services as part of health policy.

Part I

HEALTH POLICY
AND
NATIONAL PLANNING



CHAPTER 1

THE INEQUITY OF PAST DEVELOPMENT

Over the last 25–30 years, gross world production has roughly trebled, whereas the world's population has increased by barely two-thirds.¹ But the rich countries of the world have become relatively richer and the poor countries relatively poorer. The relative poverty of the developing countries is indicated by the share of world output available to their populations:

In 1972 the industrial market economy countries, with only 17 per cent of the world population, accounted for 67 per cent of total world output (using ordinary exchange rates to calculate national totals on a common basis). At the other extreme, 26 per cent of the world's population lived in countries whose total output accounted for under 3 per cent of the world total.

If ... exchange rates give a distorted picture of the real value of national production, then the correct figures would probably not be so extreme. The 17 per cent of the world's population living in the richest countries may still nevertheless produce and consume 40 to 50 per cent of world output.²

Between 1960 and 1972, the Member States of the Organization for Economic Cooperation and Development³ increased their real gross national product by an average of 5.4% a year. In some of them the rate of growth has been considerably greater than this. In rich countries there is a long average expectation of life at birth. By this crude criterion, the people in those countries enjoy high standards of health.

¹ *What now?* Uppsala, Dag Hammarskjöld Foundation, 1975, p. 26.

² *Employment, growth and basic needs.* Geneva, International Labour Office, 1976, p. 29.

³ The Members of OECD are Australia, Austria, Belgium, Canada, Denmark, Finland, France, the Federal Republic of Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom and USA.

While nearly all the rich countries still have pockets of rural and inner-city poverty and regions with chronic unemployment, in general the living standards of the poor in these countries have greatly improved over the past 30 years. Though social security provisions do not reach all the poor, there is within these countries a massive redistribution of income from those at work to the aged, the sick, the disabled, and the unemployed. In most of these countries, cash allowances are paid to help parents bear the cost of children. Increasingly, poverty is seen in relative terms: the adequacy of levels of pensions and other benefits is judged in comparison with the level of income of those at work. Social security cash benefits now go a long way towards ensuring that those not at work obtain a share of growing national prosperity, if not in the short term then at least in the longer term.

In addition, the health services have become increasingly financed by government and/or social insurance. Some countries have ensured that health services are universally available and many others are not far from achieving this aim. While the regional and local distribution of health service resources is uneven, the contrasts are not on the scale found in developing countries.

Many of the developing countries have achieved substantial growth of total real income. But the rapid growth of their populations has meant that income per head has grown much less than that in the richer countries. During the period 1965–70 the birth rate in the less developed regions was 39 per thousand, compared with 18 per thousand in the more developed regions. The least developed among the developing countries have had less growth than the more developed. Not only are developing countries much poorer as a whole than the industrialized countries, but there is also within most of them much greater inequality. “In most developing countries the richest 10 per cent of households typically receive about 40 per cent of personal income, whereas the poorest 40 per cent of households receive 15 per cent or less.”⁴ In half the developing countries the poorest 40% receive an average of 9% of personal income.⁵

The growth of government, industry and commerce have created substantial urban populations with regular pay and considerable security of employment. The urban populations that have tended to benefit most from economic development have also tended to benefit most from publicly financed health and education services and from improvements in the environment. For these and other reasons, health and

⁴ *Employment, growth and basic needs*, op. cit., p. 4.

⁵ AHLUWALIA, M. S. Income inequality: some dimensions of the problem. *Finance and development*, 11(3): 3, September 1974. The initial inequality in the distribution of income and wealth may be corrected to some extent by taxation policies. However, the effectiveness of government in redistributing resources depends on who benefits from government expenditure as well as on who ultimately pays what taxes.

educational standards are often substantially higher among the settled and regularly employed urban population than among the rural population. The advantages enjoyed by urban populations have attracted masses of poor people to settle in shanty towns on the edge of cities, hoping to share in the benefits of development.

Developing countries have not only high birth rates but high infant mortality. In some of them infant mortality is as high as 100 per thousand and in a few over 200 per thousand. "Four out of five of all the children in the world live in the developing countries, and 97 per cent of all deaths in childhood occur in these countries".⁶ In 1974, the average expectation of life at birth was estimated as 63 years in Latin America, 57 years in Asia, and a little over 46 years in Africa, compared with more than 71 years in the developed regions.⁷ Nevertheless, between 1950 and 1970 the expectation of life in the less developed regions increased by an average of about 8 years.⁸ But with regard to expectation of life at birth it is expected that the statistics will eventually show a gap of about 17 years persisting during the period 1970-75 between the developed and the developing countries. Moreover the trend is towards widening differences in expectation of life among the less developed regions.⁹

Apart from the occasional radio, bicycle, and poorly staffed primary school, life in the rural areas of many developing countries continues much as it did centuries ago. The interrelated problems of inadequate nutrition, debility, disease, unemployment, underemployment, and exposure to all the uncertainties of subsistence farming continue despite the enormous growth in world scientific knowledge and the tripling of total world production in a period of only some 30 years.

In some countries the nutritional content of the diet of the rural population has been reduced as a result of the emphasis on cash crops and because the urban population can outbid the rural population for agricultural products that are nutritionally important. There is "considerable evidence, although often fragmentary or circumstantial, that the material conditions of life for large numbers of people are worse today than they were one or two decades ago. In a very few countries average levels of living have fallen".¹⁰

In 1972 a quarter of the world's population lived in countries with average incomes per head of less than US\$ 200.¹¹ It is estimated that between 1963 and 1972 the number of seriously poor in Asia, Africa,

⁶ MORLEY D. C. Six killers. *World health*, February-March 1977, p. 4.

⁷ *Report of the United Nations World Population Conference, Bucharest, 1974*. New York, United Nations, 1975, p. 4.

⁸ *World health statistics report*, 27: 675 (1974).

⁹ *Ibid.*, p. 675.

¹⁰ *Employment, growth and basic needs*, op. cit., p. 23.

¹¹ *Ibid.*, p. 4.

and Latin America increased by 119 million and destitute by 43 million. The poor are heavily concentrated in rural areas. Nearly 300 million persons in the Third World were estimated to be unemployed or underemployed in the mid 1970s.¹² But income poverty, measured by drawing a line across the distribution of income, is a crude indicator of the extent to which the most basic human needs are met. What is important is how many people are lacking minimum nutrition, clothing or shelter, access to work, education and health services, and opportunities to participate in community life. Also of importance are the risks to which people are exposed – risks of crop failure and risks of disease from parasites and other hazards of the environment. Not every aspect of the quality of life can be measured by a statistical indicator. Nor would different societies or different individuals necessarily agree on what should be measured. It is, however, useful for planning remedial action to examine separately the various aspects of poverty.

Malnutrition affects human growth and development by adversely affecting the normal shape and size of the body, and in early childhood it can result in serious retardation in mental development. Even before the world food crisis of 1972, at least 400 million persons, of whom at least 40% were children, were estimated to have an insufficient protein-energy supply.¹³ It is estimated that in the period 1969–71 the food-energy supply in 24 developing countries was more than 10% below required levels and in deficit by less than 10% in 33 other countries.¹⁴ It has been estimated that, at the beginning of this decade, about 30% of the population of eastern Asia (300 million people) and 25% of the population of Africa (67 million people) did not have a sufficient protein-energy supply.¹⁵

The deficient nutrition of children under 5 years of age has emerged as an alarming aspect of the problem, particularly in view of its long-term implications for the level of health of the population. Sample surveys carried out in 13 Latin American countries and three Caribbean countries in different years between 1965 and 1970 indicated that the percentage of undernourished children (defined by body weight 10% or more below theoretical normal weight) ranged between 37% and 80%.¹⁶ For the countries as a whole more than half were undernourished and in seven countries two-thirds or more were undernourished. Second-degree undernourishment (weight 25% or more below the norm) affected

¹² Ibid., pp. 18, 23.

¹³ Unpublished WHO document No. EB 55/44, *Mid-term review and appraisal of progress in the implementation of the International Development Strategy for the Second United Nations Development Decade*, p. 11.

¹⁴ *Assessment of the world food situation*. Rome, United Nations, World Food Conference, 1974, p. 60.

¹⁵ Ibid., p. 66.

¹⁶ The samples are not fully comparable.

20% or more of the sample in five countries. Surveys in several developing countries have found that, owing to ignorance of their relative needs, children's diets are often 20–30% inadequate in calorie and protein requirements even when income levels are high enough to give adequate diets to older family members.¹⁷ In Asia in 1974, infant diseases arising from nutritional deficiency were reported to be widespread in many countries including India, Khmer Republic, Laos, Pakistan, the Philippines, and Viet Nam.¹⁸ "Of the 800 million children growing up at present in the developing countries more than two-thirds will encounter sickness or disabling diseases either brought on or aggravated by protein-calorie malnutrition".¹⁹

Malnutrition has been identified as the "biggest single contributor to child mortality in developing countries".²⁰ In some Latin American countries, for instance, malnutrition has been found to be the primary or associated cause in about 60% of all deaths in the age group 1–4 years.²¹ Malnutrition was estimated to be a causal factor in 28% of deaths of children under 5 years in Nigeria, 32% in Angola, 46% in Mauritius, and 76% in Egypt.²² Vitamin A deficiency causes blindness in hundreds of thousands of children every year, and many times that number are made partially blind.

While it is evident that bad housing encourages the breeding of bugs, rats, and mosquitos and that overcrowded housing can help the spread of infection, it is hard to make useful quantitative measures of the extent of these problems. In Africa, the shortage of adequate housing is acute in both urban and rural areas. It is estimated that during the 1960s and early 1970s housing increased approximately at the rate of three units per thousand people annually, while the need was estimated at 10–13 units per thousand.²³ Almost everywhere in the strictly rural areas of Latin America, standards of shelter are very low. Constraints on improving these standards include poverty, the fact that families have to build their own houses and are limited by locally available materials and traditional building techniques, and disincentives to invest in housing associated with existing systems of land tenure.²⁴ A major difficulty in improving both urban and rural housing conditions is that of providing housing infrastructure and facilities. In general, rural housing is believed

¹⁷ *Lives in peril*. Rome, Food and Agriculture Organization, 1970, p. 29.

¹⁸ *1974 report on the world social situation*. New York, United Nations, 1975, p. 87.

¹⁹ *Lives in peril*, op. cit., p. 7.

²⁰ *Ibid.*, p. 25.

²¹ PUFFER, R. R. & SERRANO, C. V. *Patterns of mortality in childhood*. Washington DC, Pan American Health Organization, 1973, p. 128 (Scientific Publication No. 262).

²² *1974 report on the world social situation*, *ibid.*, p. 68.

²³ ECONOMIC COMMISSION FOR AFRICA *Survey of economic conditions in Africa, 1972* (Part I). New York, United Nations, 1973, p. 138.

²⁴ ECONOMIC COMMISSION FOR LATIN AMERICA *Economic survey of Latin America 1973*. New York, United Nations, 1975, p. 319.

to be worse than urban housing. A survey of 91 developing countries at the end of 1970 showed that 71% of the population did not have reasonable access to community water supply — rising to 82% of the rural population. A survey for the same year showed that at least 75% of the population of 61 developing countries lacked or had inadequate facilities for the disposal of sanitary wastes — rising to 92% of the rural population.²⁵

Parasitic diseases are still prevalent — particularly in rural areas. About 200 million people are infected with schistosomiasis and well over 300 million with filariasis.²⁶ In 1975, an estimated 541 million persons were under malaria risk and 347 million of them were not covered by antimalaria programmes.²⁷ African trypanosomiasis (sleeping sickness) constitutes a permanent and serious risk to the health and well-being of at least 35 million people, and about the same number of people live in areas endemic for American trypanosomiasis (Chagas' disease). Probably the most important killing diseases in developing countries are those that are waterborne.

It was estimated in 1970 that nearly 800 million adults in the world were totally illiterate.²⁸ In the developing regions more than half the total population had never been to school, only 30% of the young people were enrolled in schools, and less than 5% went on to higher education.²⁹ In half the countries of the world, half the children enrolled failed to complete the primary level.³⁰ In some countries over half "dropped out" before completing the first year. Fewer than 40% of pupils entering Indian primary schools reached the fourth grade, which is regarded as necessary to achieve lasting literacy.³¹

Thus, unemployment, underemployment, malnutrition, bad housing, an unhealthy environment, and lack of minimum education persist on an enormous scale after a period of some 30 years during which planning for development has become increasingly accepted. While the expectation of life in developing countries has improved considerably over this period, there is little other evidence that the basic needs of the poor are being met to any greater extent than they were 30 years ago.

Past policies for development were devised with good intentions. The emphasis has been on economic growth without careful examination of who would benefit from it. It was assumed that the beneficial effects

²⁵ *World health statistics report*, 26: 720 (1973).

²⁶ HAWORTH, J. Some considerations on the control of parasitic diseases. In: Marois, M. ed. *Development of chemotherapeutic agents for parasitic diseases*. Amsterdam, North Holland Publishing Company, 1975.

²⁷ *Weekly epidemiological record*, 52: 21 (1977).

²⁸ *1970 report on the world social situation*. New York, United Nations, 1971, p. 198.

²⁹ *1974 report on the world social situation*, *ibid.*, p. 225.

³⁰ *Ibid.*, p. 226.

³¹ BERG, A. *The nutrition factor*. Washington DC, Brookings, 1973, p. 11.

of growth would spread throughout the economy. But this has tended not to happen or to happen at a very slow pace. Thus, a new thrust in development planning is to aim directly at seeing that basic needs are met. These have been defined to include minimum requirements of diet, shelter, and clothing as well as household equipment and furniture. They also include essential public services such as safe drinking-water, sanitation, public transport, health services, and educational and cultural facilities.³² A policy oriented to meeting basic needs implies the participation of the people in making the decisions that affect them.

EQUITY IN HEALTH POLICY

The part that health policy should play in this new approach and why it should play it is discussed in Chapters 2 and 4. But here it is important to spell out what a “basic-needs” approach means for health policy planning. The aim is to improve health, not just to provide health services. Priority should be given to improving the health of those with the lowest health status as part of a unified plan to improve the quality of life of the poor in developing countries.

But the word “priority” can have many different meanings. It can mean that the major part or the whole of any additional resources made available to promote health improvement will be devoted to the rural population. But in countries where the growing population consumes any additional production, no extra resources may be made available to meet health or other basic needs. Thus, priority in this sense may mean no health improvement at all. Priority might alternatively mean that higher taxation is imposed on the better-off to pay for services for the poor. Thirdly, it might mean some lowering of health care expenditure in richer urban areas to release money and other resources for poorer areas. This might be achieved by changes in the way in which health services are financed.

Each country will need to consider how to achieve greater equity in the provision of health services. The question must be asked, however, by what criteria it should be decided that equity in the distribution of services has been finally achieved. One possible definition of equity might be the provision of the same expenditure on health services per head in each part of the country. But health services of a given standard are more expensive to provide to dispersed rural populations, partly because of the costs and difficulties of travel. A second possible definition might be the provision of the same *standard* of services throughout the whole

³² *Meeting basic needs*. Geneva, International Labour Office, 1977, p. 24.

country. This would require higher expenditure per head on the rural than the urban population. The most ambitious definition would be equal health standards in every part of the country and between different social and income groups. The attempt to move towards this definition of equity would lead to a heavy concentration of health care resources on the poor. In developing countries it would involve a total reversal of the present typical distribution of expenditure on health care, which is very heavily concentrated in urban areas. But much more would be involved than a redistribution of health service resources, as health standards depend to a large extent on other aspects of the quality of life—on diet, education, the environment, and general living standards. What would be needed would be a concerted effort to help the poor to climb out of poverty. The case for this policy is made in the next chapter.

If either of the last two definitions of equity were accepted as the basis for planning health services, the implications for manpower training programmes and construction programmes would be drastic because of the logistics of providing any type of service to reach dispersed populations where facilities for travel by patients are limited. It would normally mean that basic health services would need to be available within about an hour's walk for the whole population. There would need to be a vast number of outlets – each of them with trained manpower and medical supplies. For these services to be accepted and used to best advantage, they would need to have strong links with the local community and to be integrated with other related aspects of development.

The political problems of securing such a drastic reorientation of priorities are formidable. The will to help the poor and improve the lot of the rural population will often require a major change of political direction. Political leaderships which have depended for their active support on the urban elite would have to find wider constituencies of support. Community involvement in development may create new constituencies for political leaders or throw up new political leaders. The health administrator can help to create a climate of opinion in which a move towards greater equity, however defined, becomes politically acceptable. But the meaning given to equity is a matter for political decision at the highest level. This is inescapable.

CHAPTER 2

HEALTH AND DEVELOPMENT

THE LACK OF PRIORITY GIVEN TO HEALTH SERVICES IN THE PAST

In the past, development planners have attached little importance to health services. In so far as they have considered them at all, they have tended to judge the contribution that health services might make to development by whether they increase production per head. By how much would production increase if more health services were provided and no other changes were made in society?

By this criterion the provision of health services has been regarded as unhelpful if not actually harmful for the following reasons.

(1) The bulk of health services as currently provided do not bring any lasting improvement in health and therefore do not affect production. Therefore resources used for health services are being diverted from other uses, which would increase production.

(2) Though only a small part of the health service budget is spent on public health programmes, some of these are the main cause of population growth, which has prevented those increases in production that have been achieved from leading to a noticeable increase in production per head.

(3) Population growth has led to substantial unemployment and underemployment. If better health results in a greater work output by those who are employed, this will only increase unemployment and underemployment still further. It will not lead to higher output because the labour supply is not the factor that limits production. There may, however, be a shortage of workers with certain skills, and if better health enables them to increase their output production as a whole will be higher.

Some health administrators have tacitly accepted this limited frame of reference when arguing the case for appropriations for their health services with ministries of finance or planning secretariats. They have attempted to marshal arguments in cost-benefit terms to show that a requested increase in expenditure on health services would lead to improved health and thus to higher production. But seldom have they been able to produce any hard evidence of the economic return from health services because the precise relationship between expenditure on health services (as distinct from a narrow range of specific forms of intervention) and improvements in health is hard to establish.

The contribution of health services could be assessed on other, wider, noneconomic criteria. For example, the provision of health services that people want is one way of meeting a felt need. It can be a way of redistributing wealth—of particular benefit to poor people living in rural areas. This would in itself be a move towards greater equity even if the services did not lead to any lasting effect on health and had no effect on production. The poorer would be given what the richer are able to buy and want to buy. Moreover, they would be provided with something that is unlikely to be available for them to buy and something that those who want it most may be least able to buy. The provision of health services may contribute to social cohesion and give a sense of psychological security.

Nevertheless, economic betterment is fundamental for development. Do arguments (1) to (3) above provide a sound justification for giving health services low priority in development planning, with the possible exception of services for skilled workers? If so the implications are far-reaching. For example, some economists have argued that the generation of rapid economic growth in whatever sectors of the economy and geographical areas of the country this can be achieved should be given absolute priority. After a “take-off” to rapid and cumulative economic growth has been achieved and the growth sustained for a suitable period of time, some of its fruits could be distributed in social betterment, which would include curative health services for the population and “investments” in preventive public health. These services should not be provided until it is possible for the country to support a larger population and provide the necessary services and work opportunities. The provision of health services only for workers with scarce skills would provide an economic rationale for the concentration of health services in urban areas, although this concentration may in fact have occurred for quite different reasons.

The underlying implication is one of despair that there could ever be widespread change in the lives of the rural poor or that the rural areas themselves could become areas of development. It is implied that the

factors that limit the ability of the subsistence farmer to increase his production cannot be changed. It is implied that unemployment and underemployment in rural areas cannot be remedied. The continuation of rural poverty is regarded as inevitable — at least until such time as the small sectors of economic growth expand to offer work opportunities to the children, grandchildren, or much later descendants of the present rural poor. It is implied that the primary if not the sole objective of development is to promote economic growth, defined as an increase in measurable output — irrespective of its distribution.

In view of these implications the argument may be rejected on political, social, or moral grounds. But it is important to examine to what extent the first three propositions set out at the start of this chapter are supported by evidence.

DURATION OF IMPROVEMENTS IN HEALTH

There is considerable evidence to support the proposition that the bulk of health services, as currently provided in developing countries, do not bring any lasting improvements in health. The evidence comes partly from an examination of the history of health improvement in more developed countries, partly from such scattered controlled trials as have been carried out in developing countries, and partly from examining what constitutes the bulk of health services in developing countries.

The history of more developed countries

Some of the more developed countries of the world are spending on health services nearly 9% of their total resources (measured by gross national product). Indeed, health expenditure in dollars per head is higher in some richer countries than the whole national income per head of many developing countries. But this is not the primary reason why infant and maternal mortality rates are low, why the main infectious diseases have been virtually eliminated, or why expectation of life at birth is so much longer. The higher health standards of the more developed countries are not mainly due to high ratios of doctors, nurses, and other trained health personnel per head of population; nor are they primarily due to large hospitals, costly diagnostic and therapeutic equipment, or a vast consumption of expensive factory-made pharmaceuticals. Most of the illnesses in the richer countries of the world are self-limiting, though treatment may speed recovery and relieve symptoms. Only for a minority is medical care life-saving, at least before the onset of old age. Curative health services reduce the effects of disease; to only a limited extent can they reduce its incidence.

The health standards of many European countries began to improve in the eighteenth or nineteenth centuries, long before the age of modern scientific medicine. This is shown by the sharp decline in mortality rates. The incidence of cholera, typhus, bubonic plague, tuberculosis, and measles all declined before there were any effective methods of treatment. The improvements in health were partly due to greater food production per head and better means of distributing food through improved systems of transport, which resulted in higher average levels of nutrition and a stronger ability to resist disease. Late in the nineteenth century further improvement resulted from the wider availability of clean and plentiful water supplies and the construction of efficient systems of sewage disposal.¹

The predominant reasons for the higher health standards of more developed countries are the higher levels of nutrition, the more favourable environment, and the adoption of certain patterns of behaviour which are of special importance for the maintenance of health. It is true, also, that health standards would be substantially higher if other unfavourable patterns of behaviour, such as cigarette smoking, abuse of alcohol and drugs, lack of physical exercise, and excessive eating — particularly of animal fats — were abandoned and if the incidence of road and industrial accidents was lower.

Differences in health standards cannot be explained by differences in the extent of provision of the more expensive services — for example, doctors or hospitals.² By the 1940s Sweden had attained much more favourable mortality rates than virtually all its European neighbours, though it had substantially fewer doctors per thousand population than many other European countries. In the Netherlands, maternal mortality rates were low even when the vast majority of births took place in the home.

Spending more on health services does not necessarily buy better health. The USA, which spent more on health services in terms of dollars per head at current exchange rates than any other country of the world, had poor mortality rates in 1968–69 compared with those of other developed countries.³ The United Kingdom, which spent a low proportion of its resources on health services, had for the same year better mortality indicators than France or Germany, which spent a higher proportion of their larger resources on their health services.⁴ These differences did not appear to be explicable simply by the coverage of health insurance or the distribution of health services between geographical areas or socioeconomic groups of the population.

¹ *The determinants and consequences of population trends*. New York, United Nations, 1973 (Population Studies, No. 50), pp. 146–148.

² MAXWELL, R. *Health care: the growing dilemma*, 2nd ed. London, McKinsey, 1975, pp. 14, 20, 27.

³ *Ibid.*, pp. 14, 18.

⁴ *Ibid.*, pp. 14, 18.

Evidence from experiments in developing countries

Between 1959 and 1964, investigators in Guatemala⁵ worked in a “feeding” village, a “treatment” village, and a “control” village. Child health was measured by specific disease incidence. In the village with a feeding programme consisting of dietary supplements for preschool children, without other medical or public health services, there were lower disease levels among children than in the “control” village, which had no health or feeding programmes at all. The improvements lasted for the first three years of the 5-year study period. There was also a measurable, although not striking, improvement in physical growth and development. The children in the “treatment” village, however, fared significantly less well throughout the period than did those in the “control” village, despite a modern programme of comprehensive medical services (including personal preventive measures such as immunization) and programmes in health education and environmental sanitation. There were fewer deaths than ordinarily expected but not lower morbidity or better growth and development. The investigators concluded that future programmes would need much more concerted action, both social and biological.

A study was also made in Ethiopia⁶ between 1962 and 1966 to evaluate the effect on rural health of a health centre programme. Three towns were provided with a health centre, providing both preventive and curative care. Comparisons were made with three comparable towns that were not provided with this service. A primarily curative attack on infant and child mortality did yield positive results. But there was little evidence that the programme brought lasting improvements in the health of the children in the age group 0–5 years. There were other limited health gains to the rural population, but the conclusion reached was that a broader approach was needed to improve health, including sanitary engineering and social improvement programmes.

The characteristics of health services in developing countries

Most of the effort and expenditure of ministries of health in developing countries, as in more developed countries, has been on the provision of curative services, mainly to the urban population. In a number of developing countries, only 10–20% of the rural population have reasonable access to health services, and some people fail to use these services as much as they might or even ignore them altogether. It is not sur-

⁵ SCRIMSHAW, N. S. ET AL. Nutrition and infection field study in Guatemalan villages, 1959–64. *Archives of environmental health*, 18: 51–62 (1969).

⁶ SPRUYT, D. J. ET AL. Ethiopia's health center program – its impact on community health. *Ethiopian medical journal*, 5, Suppl. (1967).

prising, therefore, that the health services provided in many developing countries have not been very successful in improving health. Such improvements as have been made have been achieved at wholly disproportionate cost. The total impact of the whole expenditure on health services has been small because so much has been spent on responding to health problems with curative action rather than on taking preventive and promotive services to the people. Moreover, health service staff have tended to work in isolation from other development workers, and health action has not been planned as part of unified development.

The most skilled curative services may make only a temporary impact on health if the basic causes of ill health are not remedied at source. For example, a child admitted to hospital for extreme malnutrition may return home to become malnourished again. Malnutrition hampers the protective mechanism with which the human body fights infection and thus increases the incidence and severity of disease. Thus, the improvement of diet may do much more to improve health status than the effective cure of the specific diseases that are presented to the health services and can be cured by them.

HEALTH ACTION AS AN AID TO ECONOMIC GROWTH

Farm animal production contributes significantly to agricultural output in many developing countries. But in many of them diseases such as bovine tuberculosis and brucellosis are widespread; they may also affect man directly. Animal trypanosomiasis is a major obstacle to the vast potential for livestock production on the African continent. It curtails the economic resources of many African countries and severely limits their economic development. If effective control of these diseases could be achieved there would be an increase in animal production and labour productivity in the agricultural sector, thereby improving the income and food supply of the population.

The open channels created for agricultural irrigation can easily become a source of cholera or schistosomiasis or provide breeding grounds for malaria-carrying mosquitos. Economic development can be promoted by designing irrigation systems that minimize or prevent these risks.

The fear of importing disease may result in barriers being placed on international trade. Some countries refuse to accept perishable goods from countries in which there has been an outbreak of cholera. Animal products are rejected on the international market because of zoonoses. For example, wool, leather, and meat are rejected from anthrax-infested animals.

Tourism has become an important source of foreign exchange earnings for certain developing countries, but the full tourist potential of areas

where diseases are known to be endemic cannot be exploited on a broad commercial basis. For example, some people hesitate to go on safaris for this reason. The outbreak of a serious infectious disease can seriously curtail a whole tourist season, and the fear of its recurrence can deter tourists in later years. This has been the case recently with cholera in a number of countries.

The process of economic development frequently involves the migration of people to places where work is available, and the development of trade leads to more travel both within countries and between them. Population movements like these can cause the spread of disease. The consequences may be serious when new diseases are carried to populations lacking the degree of immunity attained where the disease is endemic. An infrastructure of health services may be needed to promote economic growth at particular places and of particular kinds. Workers may be unwilling to migrate to work in remote mines and agricultural estates unless health services are provided.

Developments in industry or in agriculture often lead to aggregations of population in limited living space. Living habits that involve only minor health risks when the population is dispersed can involve major health risks when people are crowded together in cities, towns, or rural settlements. Communicable diseases of all kinds spread more rapidly where people are herded together at work, at leisure, or in residential accommodation. Further measures may be needed to protect health and break the transmission of disease. A more complex technology may be needed to secure safe water supplies, and more elaborate means of sewage disposal may have to be installed to ensure the same degree of health protection. It has recently been argued that it was disease rather than degeneracy that was the underlying cause of the decline and fall of the Roman Empire.⁷ Sanitary reform may have helped to save the imperial powers of nineteenth century Europe from a similar fate.

The hazard of onchocerciasis leads to the depopulation of fertile land near the rivers where the vector flies breed. Young adults emigrate and cultivate less fertile land, leaving an ageing population behind them. The deserted valleys of the Volta River basin in West Africa are estimated to cover an area of 65 000 km², with a potential output valued at US\$ 30 million per year.⁸ On top of this, a high incidence of blindness lowers family living standards still further by increasing the ratio of dependants to workers. Thus the eradication of onchocerciasis would raise living standards by opening up fertile areas suitable for intensive cultivation and reducing the burden of dependants.

⁷ McNEILL, W. H. *Plagues and people*. London, Blackwell, 1977.

⁸ Unpublished WHO document No. OCP/73.1 *Onchocerciasis control in the Volta River basin area*, pp. 53–55.

Land is particularly fertile in areas infested by malaria, and the risk of malaria leads to undercultivation. Thus it has been accepted that the control of malaria would lead to a major increase in agricultural output – as it has when the disease has been successfully controlled. This has been shown in Burma, Italy, Pakistan, Romania, Spain, Sri Lanka, Thailand, and other countries. The short-term effect of malaria control is to raise levels of living, but in the long run there may be a growth of population, which would lead to the second proposition set out at the beginning of this chapter.

PUBLIC HEALTH PROGRAMMES AND POPULATION GROWTH

Public health measures, particularly campaigns against malaria, have been blamed in many countries for the “population explosion” that has apparently absorbed the increased production that those countries have been successful in obtaining, so that there has been no noticeable increase in income per head. Hence it is argued that, if the population of developing countries had remained stable (or at least grown more slowly), the major efforts to promote the growth of output over the past few decades would now be acknowledged as the successes they have been rather than condemned for having failed to raise the standard of living, which was their original objective.

Population growth has been seen as harmful in a number of different ways. First, it has added to the available labour supply before jobs have been created for this labour to be used. The result has been growing unemployment and underemployment, accompanied by distress and social unrest. Secondly, the proportion of young dependants to adults has been increased. Families that have to support more children are less able to save or to contribute to agricultural cooperatives or to spend money directly on improving their farms. Thirdly, governments come under strong pressure to spend more on education and other services for the growing population. Thus, money raised in taxation, which could have been used to promote further economic growth, is diverted to social expenditures that contribute to economic growth only in the long term, if they do so at all.

The rapid population growth in Mauritius and what were then British Guiana and Ceylon has often been quoted as evidence of the sudden population effects of the campaign against malaria. But Frederiksen has shown that in each case mortality rates were declining sharply *before* the spraying campaigns began.⁹ Public health measures alone were

⁹ FREDERIKSEN, H. Determinants and consequences of mortality and fertility trends. *Public health reports*, 81: 716–718 (1966).

not responsible for these “population explosions”. All these countries had had considerable economic growth before the campaign against malaria.

Thus the great health success in developing countries over the past two decades — the remarkable increase in expectation of life — cannot be attributed solely to public health measures. A considerable part of it might have occurred anyway as the result of the success in raising living standards, though whether it would have been sustained without improvements in public health is hard to predict. What actually occurred was the *combined* result of public health and economic development. For example, Krishnan argued from an analysis of data for different states in India for the period 1951–61 that the decline in mortality was not due to public health programmes alone; economic development and social changes, particularly literacy, had a larger effect.¹⁰ He found that the indirect effects of literacy on mortality seemed to be almost as large as the direct effect of the doctor/population ratio. He saw education as having a twofold effect. On the preventive side it helped to promote social hygiene and on the curative side it led people to make the best use of medical facilities. This is compatible with the experience of more developed countries, quoted earlier, where the incidence of the main killing infectious diseases declined and the population started to grow rapidly before any effective means of intervention were available.

THE EFFECT OF BETTER HEALTH IN COUNTRIES WITH WIDESPREAD UNEMPLOYMENT

Health administrators have long argued that a healthy worker can be expected to do more work per hour and more hours of work and to participate in work with greater regularity than a less healthy worker. This is as true of the mother's work in and around the home as of workers producing a cash crop. Moreover, the healthy worker has both a longer life and a longer working life. Ill health leads to premature ageing. Economists have not, however, accepted that better health will lead to higher national output in a country with widespread unemployment and underemployment. If an employee working on an agricultural estate is sick, another agricultural worker may readily be found to take his place. In subsistence agriculture production may be limited by the land available to the peasant for cultivation, by his knowledge of methods of cultivation, by the rainfall and the existence of irrigation systems, by his ability to borrow, and by other restraints but not by the lack

¹⁰ KRISHNAN, P. Mortality decline in India, 1951–1961. *Social science and medicine*, 9: 475–479 (1975).

of available labour. Most tasks which are not done today can be done tomorrow or done by another member of the family. Only at certain times of the year — during cropping for example — may the available labour supply be a real limit on production, and even then other members of the family may work long hours and the sick family member may force himself to work despite his illness because the survival of the family for the whole year may depend on work done at the peak period. Thus, studies showing that in controlled situations sick workers produce less per day than healthy workers do not prove that better health by itself will lead to an increase in national production. The real test is whether the work that needs to be done is eventually done.

But this line of argument does not take into account the consequences of whole communities being weighed down with disease. The control of a major disease may open the door to the acceptance of new methods of cultivation. Moreover, it may be assuming a flexible market for labour and a mobility of labour that simply do not exist to the extent imagined in developing countries. Indeed, there is some scattered evidence that suggests that in particular circumstances morbidity and mortality may seriously reduce output.

For example, there was a poor rice harvest in South-East Asia in 1957. Soon afterwards, economists attributed this to a late and inadequate monsoon. Yet other factors may well have been at work. In Thailand, the area planted in 1957 was below the average for the whole period 1950–62. The death rate, which declined fairly steadily during the 12-year period, showed a slight upward trend in 1957. What notably increased was mortality from influenza and pneumonia. In that year there was a world pandemic of “Asian flu”, which affected Thailand. The epidemic occurred somewhere between the end of May and the middle of August. Sowing and planting are done in June, July, August and part of September.¹¹ Thus the epidemic may have led to fewer crops being planted and so to a poor harvest.

Similarly, Schultz has analysed the effects of the 1918–19 influenza pandemic on agriculture in India (now Bangladesh, India and Pakistan). Many millions of people became ill and were therefore incapacitated for a part of the crop year and deaths have been estimated at 20 million. The agricultural labour force in India may have been reduced by about 8% as a consequence of the epidemic. The area sown in 1919–20 was 3.8% less than that of the base year 1916–17. In general, the provinces of India with the highest death rates from influenza also had the largest percentage declines in area sown to crops.¹²

¹¹ GRIFFITH, D. H. S. ET AL. Contribution of health to development. *International journal of health services*, 1: 253–270 (1971).

¹² SCHULTZ, T. W. *Transforming traditional agriculture*. New Haven, Yale University Press, 1965, p. 67.

These two examples may be special cases, but they do not support the thesis that an increase in the labour force *cannot* lead to higher production. Nor do they support the thesis that ill health in the labour force *cannot* affect the level of production. Labour can be in short supply at sowing, planting and harvesting time, despite large-scale unemployment and underemployment in the rest of the year. Moreover, unemployed labour may not be available at the right place at the right time or have the necessary skills. A study conducted in Paraguay showed that malaria did have an impact on agricultural output despite the underemployment of labour.¹³

THE CASE AGAINST THE POPULATION GROWTH THESIS

The main case against those who argue that public health programmes should be postponed until economic growth has made it possible to afford them is that economic growth will itself create substantial population growth if the benefits of that growth reach the mass of the population. If it is argued that all the benefits of economic growth should be retained in the hands of a minority, this would be morally unacceptable in many countries and it would be questionable how long such a position could be sustained in political terms.

If there has been considerable economic growth and the benefits of it are not too inequitably distributed, at some point a substantial decline in mortality rates seems inevitable. The reinforcement of this mortality decline by health programmes deliberately designed to help children survive and to promote family planning can play an important part in shortening the period before the decline in mortality rates is followed by the decline in birth rates that has occurred in all the more developed countries and is already occurring in some of the developing countries. The initial effect of a decline in infant mortality may be still greater poverty in poor families as there are more mouths to feed. It is for this reason that substantially wider economic and institutional changes need to accompany health improvement, and the growth in living standards must be sustained. There is evidence that the more rapid the fall in infant mortality, the sooner this will be followed by a decline in the birth rate. Historically, there appears to have been a lag of over 50 years before a decline in death rates was followed by a decline in birth rates. In the last quarter of a century not only has the lag been greatly reduced but the rate at which birth rates have dropped has been greatly accelerated.¹⁴

¹³ CONLY, G. N. *The impact of malaria on economic development: a case-study*. Washington, DC, Pan American Health Organization, 1975 (PAHO Scientific Publication, No. 297).

¹⁴ KIRK, D. Natality in the developing countries: recent trends and prospects. In: BEHRMAN, S. J. et al., ed., *Fertility and family planning: a world view*. Ann Arbor, University of Michigan Press, 1969, p.85.

More and more governments have come to the conclusion that their rates of population growth are excessive and that intervention to limit fertility is desirable.¹⁵ A successful maternal and child health programme offers a natural springboard for family planning and birth control programmes. The promotion of family planning programmes with strong government support can assist in hurrying on the decline in fertility and securing the health advantages of better child spacing.

The key problem in family planning is not the logistics of making the necessary facilities available but the lack of desire of people to reduce their fertility. Confidence that their children will survive can help to convert them to family planning. But economic security, the spread of modern goods and services, education and wide social and cultural change, particularly in the roles of women and attitudes to women, are also of great importance. Economic development may increase the acceptance of family planning, particularly where it leads to new employment opportunities for women. There is also evidence suggesting that countries with low inequality in the distribution of income have had greater declines in fertility.¹⁶ This is true of Barbados, Hong Kong, Mauritius, Republic of Korea, Singapore, Sri Lanka, and parts of Egypt. There has been less fertility decline in such countries as Brazil, Mexico, and the Philippines. A decline in birth rates should therefore be seen as one of the important objectives of unified socioeconomic development.

A UNIFIED APPROACH

The contribution that health services can make to development should not be judged by their short-term effects on output but by their longer-term effects on the whole quality of life of the poor in developing countries. But health services cannot do this alone. What is required is a unified approach to development to help the millions of poor break out of the vicious circle of poverty, ignorance, and ill health that encloses them and has tended to perpetuate itself from generation to generation over the centuries.

As we have seen, some causes of ill health lie in the environment and some in social and cultural habits. But a major cause of ill health

¹⁵ A recent survey of population policy indicated that of 148 governments 42 perceived their rates of national population growth to be "excessive", 85 perceived them to be "acceptable", and 21 perceived them to be "deficient". However, although only 28% of governments perceived their population growth rates to be "excessive", these countries had a national population size much higher than average for all countries and contained 57% of world population and 81% of the population of the less developed countries. The number of countries reporting intervention to modify fertility rates as "undesirable", "desirable to limit fertility" and "desirable to stimulate fertility" were 88, 42, and 18 respectively, representing 35%, 57%, and 8% of total population. See: *1974 report on the world social situation*, New York, United Nations, 1975, p. 3.

¹⁶ RICH, W. *Smaller families through social and economic progress*. Washington, DC, Overseas Development Council (Monograph No. 7), p. 24.

is that basic needs are not met — particularly the need for a nutritious diet. Ill health is a cause of poverty, but poverty is also a cause of ill health. Lack of knowledge can be a direct cause of ill health, or it can cause it indirectly by being one of the causes of poverty.

The malnourished mother gives birth to a low birthweight baby. Malnourishment after birth lowers the child's resistance to disease; food is poorly absorbed and part of the limited nutritional intake is wasted in debilitating infection or shared with invading parasites. There are some developing countries where only a third of the children conceived are born and live to the age of five. Apart from the tragedy of this loss to the parents, a child that does not survive to adulthood draws on family and national resources without making more than a negligible contribution to the country's or the family's economy. It is wasteful reproduction. The loss of working time of the mother in caring for the child and the use of resources in nurturing the child is a loss with no economic or social gain. If the survival rates of fetus and child were raised to those of more developed countries, the same future adult population could be produced with a much lower use of resources. Alternatively, a much healthier labour force could be produced for the same use of resources, leaving women with the time and energy to make a wider contribution to the economic and social wellbeing of their families.

A malnourished child may suffer mental impairment and thus benefit less from any education that is provided. In areas where children are expected to help in agriculture, the rates of school attendance are low, and poor health lowers them still further. The child who is hungry while at school may gain little from education. Thus, poverty and ill health waste educational resources. Ultimately the young adult enters the labour force with less physical and/or mental capacity and less capacity to learn work skills.

The downward spiral of disease, poverty, and malnutrition is illustrated in the example of a worker suffering from anaemia. Once this disease occurs, environmental, economic, and nutritional factors are likely to enhance its debilitating effects. An anaemic individual will tend to work less and thus earn less, if he is on a piece-work or incentive basis. This in turn predisposes him to a poorer nutritional status, thus aggravating the anaemia and increasing susceptibility to infection. Increased absenteeism and lowered productivity will result, and he will be trapped in circumstances in which he cannot improve his income, his nutrition, or his health.¹⁷

When a unified approach to development has been accepted, all those involved in development planning must understand the contribution

¹⁷ *Rural development*. Washington, DC, World Bank, February 1975, p. 28.

that can be made by different types of change and by different disciplines. Instead of the public health administrator trying to persuade the economic planners to support the release of resources for the health services, he should be making his own special contribution to the planning of economic development while the economist should be making his own special contribution to the planning of health services. In the planning of economic policies full consideration should be given to the effect these policies might have on health standards. Similarly, in planning health services full consideration should be given to the impact that particular services are likely to have on economic development. Clear priorities need to be established within health services, and such priorities should be chosen after examining their likely contribution to the whole process of development.

Thus social and economic planning should be seen as complementary and not competitive. If the public health administrator is to make a full contribution to development planning, he must understand the procedures, methodology, and statistics used. A brief explanation follows in the next chapter.

CHAPTER 3

ECONOMIC GROWTH AND NATIONAL PLANNING

The resources available to any country are limited. If land, capital, and manpower are used for one purpose they are not available to be used for another. Indeed the cost of using them for one purpose is the lost benefit from using them in the best alternative way. This idea of *opportunity cost* lies at the very heart of economic thinking. Choices have to be made in socioeconomic planning between alternative uses of resources. For example, which use of resources would do most for the poor — more health services, more education services, more support for agriculture? And what should be cut back to find the resources for any developments?

However, while resources are limited at any given moment, they can be increased in the course of time. Indeed, they must be increased if developing countries are to deal with their problem of poverty. Redistribution from richer to poorer countries could do much to improve the lot of the poor. Redistribution within countries could also help, but in most developing countries, the poor greatly outnumber those who are comfortably off.

Action that leads to economic growth may be taken by private individuals or private companies, and it may be stimulated by the government. Alternatively, the government may itself promote economic growth by, for example, creating public corporations that undertake investment.

Economic growth means more production of goods and services. It can be measured in one of two ways, which are essentially two sides of a set of accounts. It can be measured by examining the change in what is produced and available to be sold, after allowing for imports and exports. Or it can be measured in terms of incomes. Was total

income higher this year than last year after allowing for any changes in prices? Was *real* income higher? Out of this simple idea has developed the system of national accounts used in most countries of the world to register changes in the whole economy year by year. They are central to the planning process. Total expenditure on health services, like other forms of expenditure, can be related to totals calculated in the national accounts. The precise significance of these totals needs to be understood because misleading conclusions can easily be drawn by assuming that they measure what they do not.

NATIONAL INCOME ACCOUNTS

The total production of goods and services in a country during a year is measured by the *gross national product* (GNP) or the *gross domestic product* (GDP). Only *final* products are added together. Final products are those sold directly to users — for example, a hospital bed. Intermediate products may be sold to the maker of the bed (e.g., the metal from which the frame is made, the springs or canvas, and the screws and nuts that hold it together), but to prevent double counting they are not included in the calculation of the value of production.

Some home production will be sold to other countries and some goods and services will be bought from abroad. Trade normally takes place because it is advantageous to both parties. For example, industrial countries want to buy the raw materials produced by developing countries and the developing countries want to buy machinery and goods that they do not manufacture at home or can obtain more cheaply in exchange for their raw materials. Total production for domestic use plus exports minus imports is equal to the gross domestic product (GDP) or the gross national product (GNP).¹ They are usually measured at market prices (i.e., after taxes on goods and any subsidies have respectively increased or reduced prices). Gross national product can be broken down according to the uses made of output — personal consumption, government purchases, net exports, and investment.

In all accounting work, including that undertaken by a nation, it is important to distinguish between investment and consumption or between capital and current costs. The general principle of the distinction is that current costs are incurred for benefits immediately obtained (for consumption), while capital costs are incurred for benefits that go on accruing after the end of the accounting period (investment). In theory, any goods with a life of more than a year could be regarded as capital

¹ The difference between GDP and GNP is property income received from or paid abroad. Any net gain or loss is added to or subtracted from GDP to derive GNP.

goods, though in practice such a strict definition is seldom applied. The measure of the resources used on capital account in national accounts is *gross capital formation*, which includes net new investment and replacement allowances for the depreciation of existing capital goods, plus additions to stocks of durable commodities. It excludes the purchase of land, as this, with rare exceptions, cannot be increased but only transferred from one use to another.

The *national income* differs from gross national product by being net of allowances for the depreciation of durable capital goods — such as machinery. Broadly, it can be said that national income consists of the total income of all persons in the country — wage earners, salary earners, and self-employed people — together with the surplus or profits of corporations before tax and any income the government receives from property and enterprises. It is normally measured in terms of the income received by the parties or “factors” engaged in production — at *factor cost*. When depreciation allowances are added to national income, and prices of goods are adjusted by indirect taxes or subsidies, it is equal to the gross national product at market prices.

Both gross national product and national income can be used to calculate whether the nation had available more or less resources between one year and another. To make such calculations it is necessary to make adjustments for any changes in the prices of goods and services between the two years. It is also useful to adjust for changes in the population between one year and another to show changes in *real* (adjusted for price changes) national income or gross national product per head. Such a calculation gives only a rough indicator of changes in economic wellbeing because children are given the same weight as adults although they consume less. Moreover, it does not measure changes in actual living standards. The proportion of income or product used in investment — constructing buildings and purchasing machinery — may have changed between the years.

The total money which households receive before paying taxes is called *personal income*. Personal income is national income less the income of government and companies. To see what households actually have available to spend, taxes on income (including contributions paid by individuals to social insurance) have to be deducted from personal income and transfers of income from government have to be added to get what is called *disposable income*. Disposable income per head and its distribution is an important determinant of what people can afford to spend themselves on health services.

Total spending on health services is frequently related to gross national product or gross domestic product when international comparisons are made. It can, for example, be shown, as mentioned in the last chapter,

that some of the richest countries in the world are spending nearly 9% of their gross national product on health services (public and private). The developing countries tend to spend a lower proportion on health services. This is what one would expect. Countries where average personal income is low have to devote a high proportion of that income to paying for food. Richer countries, like richer people, spend a much lower proportion of their resources on food.

International comparisons cannot indicate the “right” proportion of GNP to spend on health services. Even countries with a comparable GNP per head may have different needs for health service expenditure — different mortality and morbidity, different patterns of disease, different degrees of provision of sanitation and water supplies, and different nutritional problems. Education, housing, and other services may be relatively more or less developed. In terms of meeting basic needs, judgements have to be made on the priority to be given to different needs after assessing their relative urgency.

It is, however, useful to compare from year to year the proportion of gross national product going to health, education, or other services. Is a higher or lower proportion of national resources being devoted to particular services? Indeed, plans can be made on how to use any extra resources expected to become available from economic growth. Should they be left in the hands of those who receive higher incomes? Or should they be taxed away in whole or in part and given to others in cash or used to pay for improved services, and, if so, which services?

LIMITATIONS OF NATIONAL INCOME ACCOUNTS

National product and national income are no more and no less than estimates of statistical aggregates conforming to a given set of definitions. They are imperfect indicators of economic activity or wellbeing. For example, a definition of “production” is central to the preparation of national accounts. Should making things for one’s own use be counted as production? Should work done for the ordinary running of the home be counted as production?

Services performed without payment

The general principle used in constructing national accounts is to include only what is bought and sold, but exceptions are made when this would lead to clearly absurd results. It is most important from the point of view of developing countries to include an estimate of the value of subsistence agriculture. But there remain awkward borderline cases.

Services performed without payment in the household are not counted as economic production. This means that the purchase of water or the

payment of someone for transporting it forms part of economic production while the collection and transport of the water by the family itself is not so counted. If paid domestic servants are employed in the house, their services count as part of economic production, but the same work done by unpaid family members is not counted. If nursing is provided by family members to each other without payment it is not part of economic production, but it is counted under that heading if it is done by a person paid to do it.

Household activities that are not counted in national production include the preparation of food, the carrying of water and wood, washing and mending clothes, caring for children, and maintaining the cleanliness of the home. These activities are of immense importance for levels of living and particularly for the health of the family.

Imperfect distinction between investment and consumption

The distinction between what is classified as capital or investment and what is classified as consumption is imperfect. Education produces a lasting benefit like the production of a machine. Health personnel are educated and trained so that they will provide a working life of service. But education is counted as consumption. Similarly, certain health service activities produce lasting benefits without being classified under capital expenditure—elimination of malaria-carrying mosquitos, carrying out of certain types of immunization, eradication of smallpox. Capital formation is not the same as what some countries call “development expenditure”. For example, an agricultural extension service is part of development expenditure but only part of capital expenditure to the extent that it requires machinery or further buildings. On the other hand, the construction of a prestigious new government office is part of gross capital formation but not necessarily part of development expenditure.

Nonmeasurement of social utility

Production is measured in terms of money. What something costs is not necessarily a measure of its social usefulness. The value of the production of alcohol and tobacco is simply added to the production of food. Investment may take the form of the construction of luxury flats and villas or of factories. Such expenditures are simply added together. Research on new weapons is simply added to research on nutrition.

Nonmeasurement of social wellbeing

National accounts do not attempt to count every aspect of wellbeing. An increase in production involving longer working hours for everyone is counted in the same way as a similar increase in production achieved

despite a fall in average working hours. An increase in production may be accompanied by pollution of air or water. The consequential loss of wellbeing is not measured in the accounts.

Nonrecording of income distribution

National accounts in their standard form do not record changes in distribution of income. There can be economic growth that makes the rich much richer and the poor no better off than before. Alternatively, there can be no growth in income per head but a redistribution of income from rich to poor.

Gross national product and national income are inevitably somewhat crude estimates of the value of production and of income — particularly for a developing country. For example, estimates of the value of subsistence agriculture cannot be precise. Since much of the basic statistical material for the construction of national accounts is not available in many developing countries, a considerable amount of guesswork has inevitably to be used. National accounts must therefore be interpreted with a full understanding of these limitations.

National accounts provide by no means the only information needed for socioeconomic planning. They need to be supplemented by a whole series of economic and social statistics. If plans are to be made to meet the basic needs of the poor, regular information must be collected on the extent to which basic needs are unmet so that progress can be recorded. There must be regular surveys of diet, of housing, and of other aspects of living standards. Statistics must be collected on the coverage and usage of education and health services. And so on. Of particular value are surveys recording the income and expenditure of random samples of the population. These can be used to record changes in the distribution of income and in patterns of expenditure.

SOCIOECONOMIC PLANNING

The purpose of socioeconomic planning is to provide a framework for choice regarding the use of the whole nation's resources in future years. Planning involves looking ahead and trying to ensure that future actions for attaining objectives follow chosen paths or, where this is impossible, setting limits to the consequences of such actions.

Plans made in some advanced socialist societies are documents of direction and also give authority for expenditure; they tell each factory or farm what it must produce and how much investment must be undertaken. Other plans are indicative, representing no more than what it is

hoped to achieve; they are statements of intention. In most developing countries plans are somewhere between these extremes, though they may be closer to indicating expenditure in the public sector, the final authority for spending being given by the annual budget.

In the case of the private sector, the plans may consist of little more than guesses made after discussion with the main producers in the economy. Such discussions may lead producers to set themselves more ambitious targets or to decide to produce different products. For example, the planning secretariat may be able to show producers that there is likely to be a growing market for certain foods which the poor will want to purchase when their incomes are increased as anticipated in the plan. At the very least, the making of a plan may identify obstacles to further achievement so that steps can be taken to overcome them in time.

Estimates of what is likely to be achieved in the next few years on the basis of unchanged policies are sometimes made by analysing past trends and extrapolating them. Planners normally start by making an analysis of recent trends in population and national output and by examining how far the latter has been used in investment or consumption. An analysis is also made of government expenditure, taxation, and the balance of payments. More elaborate plans start by examining the changes in output that have occurred in the main sectors of production. Some planners have gone still further and attempted to break down what has been achieved on a regional basis.

This analysis of past trends and of the direction in which these trends are leading is used as a basis in the search for ways of improving these developments. For example, a more rapid growth of production may be sought in particular sectors of the economy regarded as of high priority for development. Or a different pattern of economic and social development may be sought that conforms more to chosen objectives such as helping the rural poor. The process of making a plan is intended to identify new possible initiatives and to present options for political choice, with an analysis of their consequences.

There are many ways by which governments can attempt to improve economic performance. For example, alternative development possibilities can be found by undertaking surveys of natural resources, by promoting research, and by examining the potential for different forms of investment. The infrastructure of the economy can be extended by investments to increase water supply or the output of power or to improve transport and communications. Changes can be made in the legal framework. New laws can be passed governing, for example, land tenure, companies, and commercial transactions. New initiatives can be taken to try and make markets, banking, and credit facilities work

better or to encourage saving and investment. Assistance can be given to farmers and industrialists and steps can be taken to attract foreign firms. The government can itself start or promote industries or agricultural estates. But the major obstacles to development may not be laws, institutions, or lack of investments and savings but social and cultural attitudes. Education and training facilities can be extended to encourage change and to provide skilled manpower. Last, but not necessarily least, a deliberate attempt can be made to improve the health of the population as part of the process of generating change and raising levels of living. Health hazards that are an obstacle to development can be removed or reduced in severity.

In view of all the uncertainties bound up with longer-term planning, it may be intended only to publish a plan for the next 2–5 years. Nevertheless, those who make the plan need to look 10 or more years ahead, as the benefits from certain types of expenditure take this time to mature. This is true of the expansion of general education or specialized higher education or of major investments such as the construction of a large dam or a major railway. It is true also of a health policy that aims to secure a general improvement in the health of the next generation. Moreover, the consequences for public expenditure of undertaking certain developments may come many years ahead. For example, the decision to construct a major hospital is a commitment to pay substantial running costs once it is built.

The simplest plans constitute no more than lists of “development projects” favoured by the government. More elaborate plans take the form of programmes for government spending in future years. While authority to spend will ultimately be given by the annual budget, it is intended that authorization will not be given for any programmes that are not in the plan. When taking decisions about how much of the plan can be authorized in each year, the government will consider the immediate economic prospect and the cost of the imports required to implement the plan. In particular this involves the analysis of capital projects.

Much of the work undertaken by planning secretariats consists in comparing the estimated yield of investments. If a million dollars is spent on an irrigation system, what will be the increase in annual production? And how does this compare with a million dollars spent on building a dock, a railway, a factory, or a mine? By examining the potentialities of different investments the planning secretariat can attempt to establish which investments will lead to maximum growth. But also relevant is whether employment will be created or reduced, where geographically the impact on employment will occur, and what the effect will be on the distribution of income. The effect on exports and imports must also be assessed. Will imported capital equipment be

needed and later on raw materials for making the product (for example, fertilizers for an agricultural project) and will the increased production be exported?

When the public and private sectors are added together it becomes possible to attempt estimates of future total production and construct draft national income accounts for future years in which the consistency of the various components of the plan can be tested. Each industry buys from some home industries and may also buy some imports. It also sells to other industries and/or ultimate consumers and may export some or all of its produce. It may save and invest and is normally required to pay taxes.

The planned output of all industries must be compatible with the available inputs. Output sold by industries must equal what is bought by industries and consumers at home and abroad. What is sold to consumers must equal what is bought by consumers. If the sum of all imports exceeds the sum of all exports it must be possible to finance the difference through loans or grants. Taxes paid by companies and individuals must equal taxes received by the government. Government expenditure must not exceed the yield of taxation and the capacity of the government to borrow. The plans for each part of the private sector and for the government should add up to the total plan for the whole economy. Where this elaborate modelling of the economy is attempted, the planning secretariat should draw up a series of complex tables to ensure that the plan as a whole is consistent with the plans for each sector, and to amend it if it is not.

Unless unused resources of the right kind are available, the resources needed for investment must be released — normally through savings. In relative terms, there has to be less consumption. A farmer or manufacturer may spend less of his income until he has saved enough money to buy a piece of agricultural equipment or a machine for his factory. Alternatively, he may borrow money from someone else who is currently saving. He may also borrow from someone who saved in the past but is not currently saving, or from an institution such as a bank, which lends depositors' money to earn interest.

If insufficient goods and services are available to meet demands for both consumption and investment, a likely consequence will be an increase in prices to ration demand. Alternatively, more goods may be imported from abroad to meet the extra demand so that the additional investment may result in a worsening of the balance of payments. The government can prevent either of these consequences by raising more in taxation than it spends. In other words, the government cuts consumption or the rate of growth of consumption and does the saving needed to make resources available for investment. If a country is not to borrow from

abroad, it must control the growth rate of consumption or even cut consumption in some way to make room for investment. To the extent that a cut in consumption (saving) takes place voluntarily, or it is tolerable to impose it compulsorily by taxation, investment can take place in any one year. The capacity for investment is scarce and has to be carefully rationed. This may be done by market forces — by the rates of interest paid by those who borrow to those who lend. Alternatively, the government or financial institutions may allocate scarce capital to projects with the prospect of maximum advantage.

The concept of capital formation is also relevant to the field of health, where investment may take such forms as the construction of sewage disposal and water supply systems and the construction and equipment of hospitals, health centres, and other buildings for health service use. The key characteristic of investment is that it involves waiting for the benefit. While drugs can provide immediate benefits to patients, there may be a delay of 7–10 years from the day work starts on the construction of an elaborate hospital to the day the first patient uses it. During this period money is spent on planning, constructing, equipping, and commissioning that could have been used to give immediate benefits to patients.

Since, by and large, a benefit this year is preferable to the same benefit in later years, there is a price for waiting. This price is conventionally measured by the rate of interest. Because all investments cannot be made at the same time, the rate of interest can be seen as a rationing device between different possible investments in a market economy. The higher the profits expected from the investment, the higher the rate of interest that will be paid. Similarly, a rate of interest can be used in government departments as an accounting device to make planners and administrators select the investments to which they attach the greatest importance for socioeconomic development. For example, the health administrator who thinks that part of the health budget should go in investment should first decide whether the running costs of a hospital or other health building can be met from the health budget once it is built. In addition, he must consider whether, if required, he would be willing to pay (say) 10% interest on the investment out of the health budget, since a return of 10% a year may be available on alternative investments in other sectors of the economy.

The concept of investment also applies to education and training, which is investment in people — human capital. The cost of educating and training personnel is not just the cost of providing schools, universities, or training centres but the cost of students and trainees learning instead of working. During full-time education, the economy loses because both the trainer and the trainee are making no current contri-

bution. The community is waiting to obtain the advantage of trained (or better trained) staff.

Let us assume that medical education costs \$10 000 a year per student to provide. To calculate the economic cost, it is necessary to add the value of the contribution that the student might have made to the economy or the health service. Assuming this to be worth \$2 000 a year, the annual cost becomes \$12 000. A 5-year medical course therefore costs \$60 000. Is a doctor's contribution to the health service worth not just the higher salary he will be paid but \$60 000 dollars spread over his working life plus (say) 10% interest on this investment? The same student might have been trained in a 2-year course as a medical auxiliary at \$2 000 a year. The cost of the training is therefore \$4 000, to which must again be added \$4 000 for the loss of the trainee's services over two years — \$8 000. This \$8 000 should be spread over the working life (plus 10% interest). Does the greater contribution of the doctor justify the higher training cost as well as the higher salary?

In some developing countries there are unemployed graduates, unemployed secondary school leavers, and unemployed primary school leavers. Jobs are not available at a level that they have from past experience come to expect would be available to them. But in other developing countries there is a desperate shortage of persons who have completed secondary education or are equipped for higher education in any field. If a high proportion of the few who are equipped for higher education are accepted for medical training, they are not available for training as scientists, engineers, or senior civil servants. Indeed, there is a risk that after completing their training as doctors they may not use it but go into some other field, such as general administration or politics, for which their medical degree is of little or no relevance. Higher education needs to be planned to meet the manpower needs of the whole development plan.

EXPORTS AND IMPORTS

Most developing countries depend for their foreign exchange mainly on the export of raw materials. These exports can enable the economy to be diversified later on by paying for imports of machinery and equipment to establish manufacturing industries or to develop the infrastructure of the economy. Countries that do not export enough to pay for their necessary imports have had to control their imports carefully. Usually controls have been introduced to limit the importation of consumer goods so that priority can be given to the importation of capital goods, which are important for the growth of the economy.

In developing countries, the health sector does not normally export anything (except trained manpower — particularly doctors), but it does import drugs and equipment. The construction of a major hospital in developing countries has often involved the use of foreign contractors and expensive imported materials that can have an important impact on the balance of payments. Moreover, imports of drugs, particularly those for the private sector, can also be substantial. In countries that tend to have an adverse balance of payments it is particularly important to provide health services in ways that economize in imports. This is discussed in Chapter 8. The health administrator must expect to be asked to analyse and justify the import content of his health service plan.

TAXABLE CAPACITY

There is a limit to the amount of taxation that can be levied in developing countries. Goods and services that are financed out of taxation must therefore be carefully rationed. Part of the problem is administrative — the willingness and ability of taxpayers to keep accounts. Moreover, those taxes that are relatively easy and cheap to collect are those on commodities in general consumption, and these taxes may fall on the poor as well as on the better off. The economic and social effects of taxation are discussed further in Chapter 4.

THE CHOICE OF PLAN

Planning involves the examination of options for the use of scarce resources. In developing countries, the resources that are likely to be particularly scarce are finance for investment, highly educated manpower, and foreign exchange. In addition, taxable capacity is limited. Each country's plan must take careful account of those resources that are particularly scarce. But the choice of particular options is not value-free. Some forms of investment save labour and thus generate unemployment (in the short term at least), unless other jobs are available for the displaced workers. Other forms of investment, such as an irrigation project, create work as it becomes profitable to cultivate land more intensively. Still others, such as a hospital, create employment but generate high running costs when the hospital is completed, which may have to be financed wholly or partly out of taxation. The growth of industries with high wages may result in the growth of cities surrounded by shanty towns occupied by the poor hoping to enter the high-wage economy. Some regions may prosper at the expense of other regions, and cities and towns at the expense of the rural areas. Greater output may be achieved at the price of greater unemployment and a greater maldistribution of income.

Decisions on what type of development is desirable and how quickly it can be allowed to proceed are inevitably political decisions. Similarly, political choices are needed to determine the level and type of taxation and the distribution of public expenditure. It is for this reason that the planning secretariat must work under close political direction at a high level. The secretariat produces the options and ministers choose between them. A separate ministry of planning seldom carries the political weight to select options that will be supported by the government as a whole. The secretariat is therefore usually attached either to the ministry of finance or to the prime minister's office. A planning unit is also needed in each ministry to work with the central secretariat.

CHAPTER 4

PLANNING NATIONAL HEALTH POLICY

THE CONTRIBUTION OF HEALTH POLICY IN MEETING BASIC NEEDS

As part of a unified approach to socioeconomic development, the aim of health policy is to secure a fundamental change in health status to help break the circle of poverty and liberate the population to secure change that they have chosen and in which they participate. It includes the provision of relevant education for adults as well as children, agricultural and other policies that lead to adequate nutrition, an adequate supply of clean water, effective sanitation, and improved housing.

Solutions need to be found to the problems of rural unemployment and underemployment so that those whose working capacity is increased by better health can find opportunities to use it. The provision of work opportunities for the whole potential working population is of special importance not only for the satisfaction that participation in work can provide, but because payment for work done is the main mechanism for distributing rights to consumption. If the poor secure greater buying power through greater work opportunities, the market will have an incentive to produce what is needed to meet many though not all of their basic needs.

Each aspect of development reinforces every other aspect. Economic progress leads to improved nutrition, which in turn improves health, which in turn leads to higher output, better use of education, and the capacity to secure still further improvements in health by changes in the environment and changes in behaviour.

Investment in the health of mothers and children is an investment in the labour force of the future by preventing the wasted physical, mental,

and social potential of stunted growth. High levels of morbidity and poor nutrition lead to physical and mental lethargy, inability to sustain hard work, limited ability to respond to problems and challenges, and poor motivation towards improvement and learning. In some situations, it is hard to imagine how economic improvement can be possible without a health initiative. In others, health action can be crucial in expediting action. In still others, the excruciating effort of breaking the bonds of the past will not seem worth while without a clear and visible benefit set properly in front of those who must make the move. Health is a highly visible goal in both the short term and the long term.

Health services can deal with only a limited range of health problems as health is not something given to a person by a health worker. As pointed out in Chapter 2, the main causes of ill health lie in social poverty — in the fact that basic human needs are unmet.

SOME REASONS FOR THE FAILURE OF EARLIER PLANS TO HELP THE POOR

Many development plans have focused on the growth of gross national product as an end in itself without a careful assessment of how that growth will be distributed, what the growth consists of, whether greater wealth for some will cause greater poverty for others, and whether employment opportunities will be increased or reduced. It was assumed that growth of gross national product would take care of poverty.

There are many reasons why development plans in many countries have made little progress in meeting the basic needs of the poor. First has been the continuation of long-established trends. For example, in countries where past development has been geographically concentrated — in the main cities, in mining areas, or where export crops are grown — further development has tended to follow the same pattern. The most readily identifiable opportunities for growth are in these areas, and links with developed countries (if not control of key resources by foreign companies) may reinforce this type of growth. The past pattern of development tends to determine the character of further development. The benefits of this type of growth may be spread by increasing the number of people in the developing sectors of the economy, but the pace tends to be unacceptably slow.

Secondly, the growth in national product may be almost entirely caused by a much higher production of goods that meet the needs of the middle-class market either at home or abroad or both. Thus, past national and international income inequalities have determined the character of future production.

Thirdly, the technology used may have been imported from a high-income country where it was appropriate, whereas in a low-income

country a more labour-intensive technology might be no less (and perhaps more) cost-effective.

Fourthly, those most equipped and knowledgeable to take ready advantage of a new technology tend to be the more prosperous producers whether in industry or in agriculture. For example, the potential of the "green revolution" has tended to be exploited by the relatively prosperous farmers with the result that the small farmers have been put in an unfavourable competitive position. Their level of living may have been lowered while the large farmers became substantially better off.

Fifthly, there may be political reasons why patterns of development have been chosen that benefit the urban middle class.

PLANNING TO MEET BASIC NEEDS

Past experience shows that a plan will be unlikely to help to meet basic needs unless critical decisions are taken about such factors as the kind of growth built into the plan, the geographical location of investments, the sectors of production in which growth should take place, and the amount of employment to be generated by economic growth. The technology that will be used, both in industry and in agriculture, is important because it is a major factor in determining the number of job opportunities and thus the character of consumption demand. How much production can be done by labour-intensive methods without loss of overall efficiency? The foods produced in the agricultural sector can have a major effect on nutritional standards. If the emphasis of the plan is on cash crops for export, how will it be possible to obtain the food needed to improve the diet at home? Can it be imported and distributed to those who need it and, if so, at what price? How is it possible to ensure the production and distribution of other goods to meet the basic needs of the low-income section of the population? How is it possible to ensure that they are in a position to buy what is produced? Different answers to these questions will be appropriate in different societies according to the local situation and according to the changes that are politically acceptable.

Tax policies, credit policies, price and employment subsidies, and preference in the allocation of sites for factories can be used to reorient the pattern of production in favour of the basic goods needed by the poor — including clothing, food, household equipment, and materials for the improvement of rural housing — especially by means of labour-intensive technology. A whole range of policies can be used to prevent the further concentration of new industrial development in the main cities.

In many developing countries special programmes are needed to

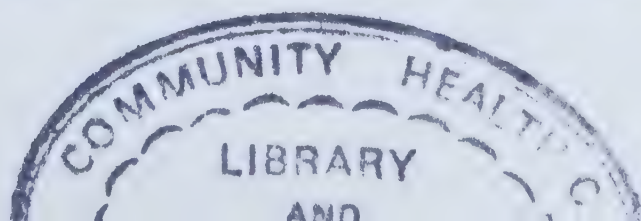
strengthen the competitive position of the small farmer and to help him make use of improved technology. Land reform, and in some countries changes in tenure systems, will often be an indispensable first step. General programmes of rural credit and rural cooperatives tend disproportionately to help the large farmer. What may be needed is special programmes aimed to support the small farmer and new institutions such as cooperatives and farmers' associations to provide credit and supplies. Such institutions are a possible basis for community organization. The key problem is to find and train people who will run them efficiently. In addition, there may be a need to create secondary employment in crafts and industries in the rural areas.

Education programmes need to reinforce the process of development. The conventional school system has often failed to be the instrument of economic and social transformation that some had hoped it would be. Radical changes may need to be made in curricula and methods of instruction to make it more relevant to development. In rural areas, the major requirement may be to provide educational support for the new technologies. Education is a continuous process and there is a great need to repair gaps in the earlier education received by adults. The standard of education in the schools that the adult population attended may have been low, the curriculum of little relevance, and attendance very infrequent — particularly when charges were made for education that poor families could not afford to pay and when children were needed to help with planting and cropping.

Many are poor today because their parents were poor; they cultivate the same land, are subject to the same tenure system and are exposed to the same risks of natural disaster and variable rainfall. They have the same poor health and scarcely greater opportunities for education. There is a great scope for imaginative and innovative adult education programmes geared to the real needs of the local community.

Education can also be used to support health policy. Both children and adults can be taught the causes of the main diseases, why clean water is important, why human refuse must be buried and not allowed to contaminate the water supply, and the importance of personal hygiene. The elements of nutrition can be taught to girls at school and women at adult education courses — how to maximize the nutritional value of local food supplies, what foods to grow in plots around the home, and how to cook them so as to retain maximum nutritional value. In addition, instruction can be given in the importance of breast-feeding, the care of infants, how to recognize the common diseases, the use of simple household remedies, and the elements of first aid. Finally, education can be used to press home the message of birth spacing and the use of family planning supplies, where such instruction is culturally acceptable.

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A strong political commitment to economic and social reform is essential to push development towards meeting the basic needs of the poor. For such changes to be adopted and not just promised, the poverty groups may well need to achieve a political weight more commensurate with their number. Strong community organizations may be needed to bring this about. Thus, participation in planning local development may be required not only to see that priority needs are met first and to secure full cooperation with development plans once they have been agreed but also to ensure that agreed policies are consistently and persistently implemented.

The discussion of health can be a valuable starting-point for involving the community in planning for its own development. Parents want their children not only to survive but to develop their mental and physical capacity to the maximum. Thus, to discuss why children die and why children grow up with stunted development and what preventive action the community can take is to start from the felt needs of the community. Once the community has found it possible to secure an improvement in health standards, it will have greater confidence that it can secure changes in other spheres of life. Thus, the community's action to improve health can be a stimulus to the whole process of development.

THE ROLE OF THE HEALTH ADMINISTRATOR

In the past the health administrator has been involved in the planning process primarily as an advocate for spending on health services. He has rarely made a contribution to the totality of the plan itself. However, the whole style of development that a country selects through its planning process may be more important for the health of the population than any action that can be taken through the provision of health services. A plan selected solely to maximize the growth of gross national product, for example, may have the effect of reducing the quality of life of the bulk of the population. This consequence may not have been appreciated either by those who designed the plan or by the politicians who approved it. The health administrator has a vital part to play in pointing out the possible effects on health of draft development plans.

At the central level, ministries of health will need to work particularly closely with ministries responsible for planning, finance, agriculture, industry, education, and community development. At the local level, community development requires the integration of the work of all these ministries in all relevant spheres of economic and social life — a team approach with the sharing of skills by those with different training. But local effort must be planned. Staff will need training to accept the

new cooperative role. And local staff will need continuous supervision and support.

The plan must provide for the raising of the level of living of the poor in view of its importance for their health status. One way of achieving this may be to increase job opportunities and to channel special help to small farmers. A further way may be to lighten the load of taxation falling on the poorest and to raise more taxation from those more able to pay. The health administrator will be concerned about any impact the plan may have on the price of essentials bought by the poor. He will be concerned about the importation and production of tobacco and alcoholic drinks and the importation and marketing of dried milk that may reduce breast-feeding and jeopardize the health of babies. He will be particularly concerned about job opportunities and educational opportunities for women, in so far as education and work outside the home tend to encourage the acceptance of family planning.

He will also be concerned about plans for agricultural irrigation, partly because of its potential for food production, partly because of its potential for improving water supplies, and partly because of the risks of contamination, which can be avoided by appropriate design. He will also be concerned about changes envisaged in the population of cattle, poultry, and other livestock in view of the need for veterinary services to protect man from diseases carried by animals.

Plans for industrial development and for improvements in the infrastructure may also bring new health risks and a need for more services. They raise a number of questions. To what extent will these developments add to urban growth and thus the need for costly water and sewage developments? What provision is being made for urban housing to avoid the possible growth or further growth of shanty towns? To what extent will use be made of migrant workers, who will be unable to receive care from their families and may spread venereal and other diseases?

Planning should proceed from the bottom upwards and not from the top downwards. Local communities should be the first to be involved in the planning process. Diagnosis is the first stage in the preparation of a plan. The health administrator can help identify what changes are of special importance for health, for which sections of the population, and in which geographical areas. He can press for priority to be given to the poorest, whose health is most at risk. If the country provides primary health services accessible to the whole population, the personnel of these services will be in contact with the local community and thus well placed to learn the extent and character of the poverty in their own areas. They can survey social conditions, monitor the extent to which earlier plans are helping to promote conditions favourable to

health, identify any deterioration in conditions for particular sections of the population, and provide early warning of impending crises.

As primary health services are not yet established in most of the rural areas of developing countries, quick and simple surveys may have to be undertaken to obtain the important facts. Health personnel can work with others in the design of such surveys. For example, reliable information is needed on diet. Food consumption in rural areas is largely dependent on what the farmer grows on his land. The food he can raise and the amount of cash he can get for his crop determine the amount and type of food his family eats. A study of what is grown can give a good indication of the nutrients that are likely to be adequate and those that are likely to be deficient. Is the problem a shortage of calories, of animal protein, or of vitamins and does it mainly affect men, women, or children? How far is the problem the availability of supply, lack of money to buy locally available foods, customs and taboos, or the distribution of particular foods within the family?

Once the problem is identified many different skills may be needed to work out alternative plans for solving it. For example, the solution may lie in more intensive cultivation, new systems of crop rotation, or the introduction of new seeds, crops or livestock. Changes may be needed in land tenure or improvements in irrigation systems. Land may be currently used for cash crops that would be better used in part for growing foods for family consumption. Cash may be wasted on purchases of negligible nutritional value such as some proprietary beverages. If some locally available foods are culturally unacceptable, could they be made acceptable if presented in another form? Is there a need to improve markets and food distribution systems? For example, fish may not be transported inland. Can new ways of preserving and transporting fish be developed? Could nutrients be added to staples or to salt? Or is the problem primarily one of health education — of making mothers aware that young children must have certain foods that are currently consumed only by adults? Is there a need for a supplementary feeding programme for priority groups such as young children and pregnant women while permanent solutions are being found?

The participation of the local community in considering how to improve nutrition is itself an important part of the development process. Once the local people themselves have come to appreciate the real causes of malnutrition, they may find the most practical solutions. Moreover, the implementation of many parts of the plan that is finally adopted will depend on community acceptance and community support. But further action to support local initiatives may well need to form part of national and regional plans.

The improvement of water supplies may be required to increase agricultural output. It may also be needed for health reasons — particularly if the water supply is faecally contaminated. The provision of safer and more plentiful water supplies may require action on a number of fronts. Is it possible to improve, develop, and purify the traditional system of water supply by a community project? Does a well need to be dug and is such an operation within the capacity of the community, if supplies were made available? If water supplies are not readily available in the village, is it practicable to plan to move the settlement nearer to water supplies that are available? If the best solution cannot be afforded for a number of years, what improvements can be made meanwhile?

Once again these are questions that the community itself can consider. Indeed, the whole debate can be used as an opportunity for health education. The impurity of existing water supplies can be demonstrated and the sources of contamination traced. Again, ameliorative action may be taken by the community itself while more fundamental solutions are built into the plan. Once the local community has come to appreciate the dangers of a contaminated water supply, any new source of supply is less likely to be contaminated.

Closely related to water supply is the question of the safe disposal of excreta. A solution to this problem may be essential to securing pure water supplies. And once more the success of any measures taken is likely to depend on community cooperation. If the ideal solution is too expensive to be implemented in the immediate future, what can be done meanwhile? For example, family latrines may be constructed as part of a community action project, with concrete slabs provided by the government. If the community has dug them, the latrines are more likely to be properly maintained and used.

The acceptance by the community of the need for the safe disposal of excreta can lead on to wider interest and participation in securing a cleaner and healthier environment. Pests that are dangerous to health can be eradicated. Housing can be improved by local effort, using local materials as well as materials provided as part of the plan.

At some suitable stage the subject of family size and birth spacing can be discussed with the local community to see how far family planning services might be acceptable. In some societies the acceptance of family planning will depend on changes in the status of women. Such changes may need to be encouraged through community education.

It is the task of local health personnel to identify health hazards and make the community aware of them, to identify the problems that can be solved locally, and to work with local people to solve them in so far as this is possible. There are many ways in which local health conditions can be improved at little cost by local effort, using supplies provided for

the purpose. Other problems may require more radical solutions that need to be built into the national plan. Progress needs to be regularly monitored to ensure that the plan is having the intended effect of helping to meet basic needs.

PRIORITIES FOR THE HEALTH SERVICES

What should be the priorities for the health services as part of the national plan? These priorities should determine the programme for the construction of buildings, purchases of equipment, and research, education and training. Until it is decided what needs to be done, it is not possible to decide on the grades of staff and levels of training needed to do it. There is always a danger that the past training of staff and the buildings already in existence will determine the plan for health services. Training and building programmes should rather be a consequence of the plan and the means of implementing it. No country starts with a clean sheet — with no inheritance of staff and buildings and ongoing programmes. Staff trained for a particular role expect that role to be continued. Once a service has come to be provided, the public expects that service to continue. Change may therefore have to be gradual. A plan necessarily involves a year-by-year shift of resources from the implementation of past policies towards the implementation of new policies.

In the health sector in most countries, priority consideration is given to making primary health care available to the whole rural population. This has been defined as “an integrated approach to services for prevention, cure and the promotion of health for both the community and the individual, with maximum reliance on available community resources”.¹ Health personnel are required to work with other development personnel to provide the health component to the team, to generate community organization, and to help secure active community participation.

Should services favour any particular age or sex group? Some services need to reach everyone if they are to have maximum effect. This is the case with many immunization programmes, though there are some diseases in which the incidence is concentrated in particular age groups. Services such as health education, which attempt to change the pattern of behaviour, may need to concentrate on opinion leaders in the first instance, and these may often be the village elders. In so far as the aim is to change the running of the household or introduce family planning, the ultimate target group may be women rather than men. But in some cultures women will not introduce change without the knowledge and

¹ Unpublished WHO document No. CWO/76.1, p. 6.

support of their menfolk. Thus, it may be necessary to approach the men first — at least until there is an improvement in the status of women.

Beyond this, there is a strong case for special concentration on the promotion and protection of the health of mothers and children. At present only about 10–20% of women receive some type of prenatal care, and the use of untrained birth attendants is still very common. The combination of malnutrition and debilitating disease causes the highest death rate in infants and children under the age of five. It also causes permanently stunted development. Though safe and highly effective vaccines are available and have brought startling decreases in prevalence of such diseases as poliomyelitis, pertussis, measles, diphtheria, tetanus, and tuberculosis in the more affluent countries, little use has so far been made of them in the rural areas of developing countries. Only about 4 million of the 80 million children born each year in Africa, most of Latin America and South-East Asia are being effectively immunized.² The problems generally encountered are those of organization, of transport, and of ensuring that vaccines are held at the appropriate low temperature at central and regional levels and in the field. The establishment of primary health care services throughout the rural areas would go a considerable way in helping to resolve these problems. If this is to be achieved in reasonable time and at reasonable cost, innovative and economical services will be needed. Such services are discussed in Chapter 8.

What the rural peoples of the developing world need most to improve their health is more food, better balanced diets, immunization, safe water supplies, efficient disposal of human waste, and family planning services. Enormous improvements in health could be attained without any use of costly high-technology health services. Major progress in health does not depend on the extensive use of highly educated manpower, or on taxable capacity, or on imported materials. It depends to a large extent on what people can do for themselves. It does not, however, follow that because the main changes required are basically simple they can be simply secured. What does follow is that there should be no major economic obstacles to attaining them.

² Unpublished WHO document No. CWO/74.1, p. 12.



Part II

THE ECONOMICS OF HEALTH SERVICES



CHAPTER 5

THE ANALYSIS OF HEALTH SERVICE EXPENDITURE

Few developing countries have made estimates of *total* expenditure on health services, both public and private. While government expenditure on health services may be known according to the definitions used in the particular country, and while further information may be collected from social security agencies and private hospitals where they exist, comprehensive information is seldom available covering the whole of the private sector, including voluntary non-profit agencies and the expenditure made by individuals in purchasing every type of health service.

Estimates of total expenditure on health services are essential information for health policy planning. Money is a convenient, if imperfect, way of adding together the quantity of resources of different types (e.g., manpower, equipment and supplies), just as crude mortality and morbidity rates are convenient but imperfect ways of aggregating the extent of health needs. And just as crude mortality or morbidity rates can be misleading and have to be broken down and related to age, sex, cause and geographical area before they start to provide really useful information, so health expenditure needs to be broken down by the type of resource, by the source of finance, and by the different types of service provided in each geographical area to make it useful for planning. An analysis of this kind focuses attention on the deployment of existing health resources and on possible ways of improving it. Which people are deriving what health benefit from each part of the expenditure and how far does this contribute to the aims of the whole national plan? How far, for example, is health service expenditure helping to solve the problem of poverty?

An analysis of past expenditure on health services can show the extent to which money has been spent on particular services in each geographical area. It can be used to calculate the cost of extending a particular pattern of services currently provided for one community to another similar community. It can also be used to identify expenditure on particular health problems such as malaria, sleeping sickness, or cholera and to derive unit costs, which can be valuable tools in the planning of services.

DEFINITION AND METHOD

Health service expenditure needs to be carefully defined before it can be measured. It is useful to try and include all private expenditure made in the hope of securing health improvement, whether that purpose was achieved or not or was likely to be achieved or not. It follows therefore that rough estimates of private expenditure on indigenous practitioners and herbal remedies should be included wherever they can be made, as well as expenditure on scientifically trained health personnel and factory-made pharmaceuticals. Moreover, it is important to include estimates of the travel costs incurred by patients in obtaining health services and of the travel costs of those accompanying them. These costs can be high in relation to the cost of services received. For example, a study of Mityana Hospital (Uganda) showed that on average each outpatient spent US\$ 0.35 in transport to receive an average of about US\$ 0.12 of care. On average each inpatient spent US\$ 1.09 in travel.¹ But there are also indirect costs. Patients and their relatives may take time off from their work to travel to where health services are provided and spend time waiting. And, when the patient is sick at home, relatives may take time off work to provide care. But it is unlikely to be practicable to attempt national estimates of these indirect costs in a developing country.

In many developing countries, even when the government attempts to make health services freely available, expenditure on private services greatly exceeds expenditure on government services. This may be the case in rural areas, where indigenous practitioners and herbal remedies are used, as well as in urban areas, where medical practitioners and nurses are consulted on a private paying basis (including those working in the government service, whether this is legal or not). Moreover, private expenditure on pharmaceuticals is often very high in relation to expenditure on them in the government services.

Rough and ready estimates of expenditure are better than no estimates at all. Estimates can be built up either from information obtained from

¹ KING, M. *Medical care in developing countries*. Nairobi, Oxford University Press, 1966, para. 12: 5, 12: 7-8.

consumers or from estimates obtained from providers. If both types of estimate are available, they can be compared to check on the reliability of each approach. Estimates can be made of the average earnings of private practitioners and multiplied by the number of full-time equivalents believed to be in private practice. Estimates can be made of the running costs of private hospitals from estimates of the number of beds, the proportion occupied, and the charges per bed-day. Where household surveys of consumer expenditure have been undertaken, the average expenditure per household (as shown in the survey) can be multiplied by estimates of the total number of all households. For pharmaceuticals there is a third way of making estimates, in addition to surveys of retail sales and household expenditure surveys. Statistics showing the value of imported pharmaceutical products can be adjusted for wholesale and retail margins. The value of any products manufactured locally can be added and deductions made for the use of products outside the private sector.

In the public sector, expenditures on health services may be found in the budgets of many government departments, in addition to the department formally responsible for health services. For example, the department of works may provide buildings for the provision of health services. The department responsible for defence may provide health services for the armed forces, their dependents, and others. Separate health services may also be provided for the police and transport workers. Veterinary health services may be paid for by the department responsible for agriculture. The ministry of labour may have information on social insurance expenditure on health services. The problems of defining and estimating health service expenditures have been discussed elsewhere.^{2,3}

Even when all available information is brought together, there are problems in distinguishing health service activity from other forms of activity. Hospitals and social welfare institutions often overlap in function. Hospitals may look after people who really need social welfare care and no longer need medical supervision or 24-hour nursing. Similarly, patients needing medical care may be looked after in social welfare institutions. This is true of the mentally ill and retarded as well as of the physically disabled, frail, and elderly.

Once estimates of health service expenditure (including that on education and research) have been made, they can be broken down in a number of different ways that are useful for different purposes — for example, by type of resource, by level of sophistication of the service, or by population served.

² ABEL-SMITH, B. *Paying for health services*. Geneva, World Health Organization, 1963 (Public Health Papers, No. 17).

³ ABEL-SMITH, B. *An international study of health expenditure*. Geneva, World Health Organization, 1967 (Public Health Papers, No. 32).

Considerable effort will often be needed to derive breakdowns of this kind, as budgets for health services in developing countries have seldom been designed to facilitate health service planning. The best way to start might be to examine personnel costs, which often make up half or more of total expenditure. The first step is to calculate the annual cost of staff at different grades. From information on the deployment of health workers, it is possible to attribute their costs to hospitals, health centres, and other units.

Next it may be useful to try to allocate the cost of medical supplies. Indents may be available from which estimates can be made. Certain costs such as food, bedding, cutlery and crockery may be incurred on any scale only in hospitals. After all those items on which information is available have been allocated there may still be a residual of some 10%. Failing the discovery of other information it may be sufficiently accurate simply to divide this out in proportion to the costs for which a basis of allocation has been found.

To indicate the general pattern of distribution of expenditure on health services and to produce unit costs, rough calculations are sufficient. It is not necessary to make sophisticated budget surveys or to develop elaborate questionnaires to ascertain the gross incomes of private practitioners or indigenous practitioners. A considerable margin of error in the estimates would not change the general picture.

AN ILLUSTRATION OF EXPENDITURE ANALYSIS

The following example is for an imaginary country (Rupania), which is not untypical of many countries in Africa or Asia. The currency of the country is the rupar. The population is 10 million. The gross national product is 2000 million rupars and the total expenditure on health services is 100 million rupars. To simplify the example, there are assumed to be only two methods of financing health services. First, the government provides a service that is free at the time of use and is financed out of general taxation. Secondly, there is a private sector where those who can afford to do so purchase services from private practitioners (both western trained and indigenous) and from private hospitals and purchase drugs from pharmacies and traditional herbal markets. There is no voluntary or compulsory health insurance and no financing by charity or foreign aid.

Breakdown by type of resource and method of finance

Table 1 shows the breakdown of expenditure by type of resource and between the government and private sectors.

TABLE 1
BREAKDOWN BY TYPE OF RESOURCE AND METHOD OF FINANCING

Type of resource	Expenditure, in millions of rupars		
	Government sector	Private sector	Total
<i>Capital expenditure</i>			
Teaching hospital	4.5		4.5
Health centre	0.5		0.5
<i>Current expenditure</i>			
Payments to personnel (gross for private sector)			
Doctors and dentists	9	20	29
Nurses	8	4	12
Auxiliary health workers	4	—	4
Indigenous practitioners	—	8	8
Others	4	2	6
Transport	6	4	10
Pharmaceuticals, herbal medicines, surgical and medical supplies	8	12	20
Other goods	3	3	6
Total	47	53	100

In this example more is spent in the private sector than in the government sector — mainly on doctors and dentists, indigenous practitioners, drugs, and herbal remedies. In the government sector, about a tenth of the budget is devoted to building a second teaching hospital, which will take 7 years to complete, and about a fifth of the budget goes on salaries for doctors and dentists. Transport in the government service takes nearly an eighth of the budget.

Breakdown by imports and home production

A breakdown of expenditure into home-produced goods and imported goods is shown in Table 2.

The construction of the teaching hospital, which is the main capital expenditure, involves a much higher cost for imported materials than

TABLE 2
BREAKDOWN OF GOODS BY IMPORTS AND HOME PRODUCTION

	Expenditure, in millions of rupars					
	Government sector		Private sector		Total	
	Home	Imports	Home	Imports	Home	Imports
<i>Capital expenditure</i>	1	2.5			1	2.5
<i>Current expenditure</i>						
Transport	—	4	—	2	—	6
Pharmaceuticals etc.	—	8	4	8	4	16
Other goods	2	1	2	1	4	2
Total	3	15.5	6	11	9	26.5

for home-produced materials. Most of the other capital expenditure in Table 1 is on local labour. The heavy cost of transport is due to imported supplies and replacements for the fleet of vehicles maintained by the government and to imported buses and taxis used in the private sector. The major part of expenditure on pharmaceuticals is on imported products.

In Table 3 the cost of the government sector is broken down to show the cost of central and regional administration and the level of sophistication of the services provided.

	Millions of rupars
Central and regional administration	3
Teaching, training, and research	2
New teaching hospital construction	4.5
Existing teaching hospital and regional hospitals — running costs	16
District hospitals — running costs	14
Health centres — construction of new centres	0.5
— running costs of existing centres	5
Dispensaries — running costs	1
Environmental health and preventive campaigns	1
Total	47

Breakdown into preventive and curative services

tive activity separately, it is nevertheless important to cost separately all such activity as can be separately identified. When the same staff are engaged in both preventive and curative work, estimates need to be made based on how staff actually spend their time — not on how they are expected to spend their time.

In developing countries it is valuable to isolate a particular element in the cost of providing services — namely, the cost of supporting services (continuing education for field staff, local administration, and supervision). This cost can be high where the services are provided to a dispersed population by auxiliaries or voluntary workers with limited training. Continuing education, local administration, and supervision need to be provided by more highly trained and better-paid staff. These people have to travel widely in the course of their work, and in countries with poor roads the cost per vehicle per mile can be high because of wear and tear, the cost of maintaining petrol supplies in remote areas, and the cost of recovering broken-down or damaged vehicles and repairing them. Too often it is assumed that the cost of a rural service consists only of the cost of paying the personnel and providing the supplies they use. But, unless there are relatively frequent visits to provide continuing education, supervision and leadership, a poor service is likely to be provided.

It is assumed in our example that expenditure on identifiable preventive activity is negligible in the private sector. Thus the costs of government services as classified in Table 3 are broken down in Table 4 between curative, preventive, and supporting services.

TABLE 4
BREAKDOWN OF THE RUNNING COST OF GOVERNMENT FIELD
SERVICES^a INTO CURATIVE, PREVENTIVE, AND SUPPORTING SERVICES

	Running costs in millions of rupars			
	Curative	Preventive	Supporting	Total
Regional and teaching hospitals	16.0	—	—	16
District hospitals	11.5	0.5	2	14
Health centres	4.0	0.5	0.5	5
Dispensaries	0.9	0.1	—	1
Environmental health and preventive campaigns	—	1	—	1
Total	32.4	2.1	2.5	37

^a Excluding the cost of administration, teaching and research.

In the Rupanian health services, the staff of health centres and dispensaries were intended to divide their time about equally between preventive work and curative work. In practice they have been so pressed with demands for curative work that they have neglected their preventive

work — as shown in the analysis in Table 4. Only a tenth of their resources are devoted to prevention. Out of the total health expenditure of 100 million rupars, just over 2 million rupars goes on identifiable preventive work, and of this sum perhaps 0.5 million rupars are spent on providing environmental sanitation and public health inspectors in the main towns. Calculations of this kind bring to the attention of the health administrator the situation as it actually is, not as he may think it is.

Breakdown by urban and rural population

Estimates of expenditure are of greatest use when they are related to the population by whom the expenditure is incurred. The extent to which people actually have access to services depends on how far they have to travel to obtain them, how long it takes to make the journey and obtain the service, and how much it costs them (for example, where buses and taxis are available). In rural areas in developing countries public transport is rarely available, and few patients can be transported by vehicles that are making journeys for other purposes. The time, effort, and loss of working time involved are therefore major determinants of access to services. The fact that some people do occasionally make long journeys to use health services tends to conceal the fact that most people do not.

Studies show that the further people live or work from units where health services are provided, the less use they make of them. For example, it was found in Uganda that “the average number of outpatient attendances per person per year will be seen to halve itself about every two miles (3.2 km) for the hospital and the dispensary, and every mile (1.6 km) for the aid post”.⁴ In Kenya, “40 per cent of the outpatients attending a health centre lived within 5 miles of it, 30 per cent lived between 5 and 10 miles from it, and a further 30 per cent lived more than 10 miles away”.⁵ The more elaborate the health services, the further people are willing to travel to use them. For a simple aid post to be used, it needs to be very near indeed as well as to have available the necessary equipment and supplies.

It is relatively simple for those staffing a hospital, health centre, or dispensary to ask 1000 consecutive patients where they live. From such information rough calculations can be made of the extent to which the population resident in different areas uses health services and thus of how the benefits of the health budget are distributed. A first step is to make a division between expenditure in urban and rural areas.

⁴ KING, M., *op. cit.*, para. 2:7

⁵ *Ibid.*, para. 2:6.

An analysis of the running costs of services by urban and rural population might produce the results in Table 5. In Rupania, only 10% of the population live in urban areas. The regional and teaching hospitals are intended to receive referrals from all over the country, but in practice 95% of their patients come from the urban areas. Similarly, 95% of the patients using district hospitals come from the urban areas. Health centres and dispensaries are wholly used by the rural population. The urban/rural breakdown of expenditure shown in Table 5 includes estimates for the private sector based on the location of practitioners and pharmacies.

TABLE 5
BREAKDOWN OF RUNNING COSTS OF HEALTH SERVICES^a
BY URBAN AND RURAL AREAS

	Running costs, millions of rupars		
	Urban	Rural	Total
<i>Government services</i>			
Teaching, regional, and district hospitals	28.5	1.5	30
Health centres	—	5.0	5
Dispensaries	—	1.0	1
Environmental health and preventive campaigns	0.5	0.5	1
<i>Private sector</i>			
Doctors, nurses, and other staff	25.0	1.0	26
Indigenous practitioners	2.0	6.0	8
Transport	3.0	1.0	4
Pharmaceuticals, herbal medicines, and other goods	11.0	4.0	15
Total	70.0	20.0	90

^a Excluding the cost of administration, teaching, and research.

This analysis shows that about three-quarters of the health service expenditure goes on the urban 10% of the population, leaving about a quarter of the expenditure for the rural 90% of the population. Most of the expenditure in the urban areas is private. Half the cost of the health services used by the rural population goes on indigenous practitioners, drugs, and herbal remedies. The population of the rural areas is 9 million and of the urban areas 1 million. Government expenditure allocated to urban areas is 29 million rupars or 29 rupars per head. Government expenditure allocated to rural areas is 8 million rupars or 0.88 rupars per head. Thus expenditure out of taxes, to which all may have contributed, is about 33 times greater per head for the urban population than for the rural population.

A further analysis can be made of the use of health services by the rural population, based on the distance from any centre providing services. In Rupania 60% of the rural population live more than 15 km from any health unit and make negligible use of government health services, while 10% live within 5 km and make three times more use of

the services than those living 5–15 km away. Thus the 10% living within 5 km use 4.4 rupars per head, and the 30% living 5–15 km away use about 1.5 rupars per head. About half of the whole population of Rupania receive virtually no government-financed health services, even though they contribute a share of the taxes out of which the health services are provided. Those without access to the government service disproportionately use the private sector. The average expenditure per head of the rural population on private services, provided mainly by indigenous practitioners, is about 1.33 rupars per head.

To provide the same government expenditure per head in rural areas as in urban areas would require a total health service budget of 290 million rupars out of a gross national product of 2000 million rupars – 14.5% of gross national product. To provide the same *standard* of service to the rural population as to the urban population would cost much more in view of the cost of travel.

From samples of service use, estimates can be made of the cost of government services used by different age groups, as shown in Table 6. A more refined analysis would separate the sexes.

TABLE 6
ALLOCATION OF RUNNING COSTS OF SERVICES BY AGE GROUP^a

Age group (years)	Numbers (millions)	Cost (millions of rupars)	Cost per head (rupars)
0–1 ^b	1	7	7.0
1–5	2	11	5.5
5–15	3	5	2.66
15–45	3	7	2.33
over 45	1	7	7
	10	37	3.7

^a Excluding the cost of administration, teaching and research.

^b Antenatal, postnatal and maternity services included.

A table of this kind can be used for calculating what resources would be needed to provide the same standard of service to a population of changing age composition. The information can be used when planning the future budget of the health services.

UNIT COSTS AND THEIR USES

A further and more detailed analysis of government health expenditure related to statistics of hospital use, consultations, vehicle-miles, numbers of students, duration of courses, and drop-out rate for health personnel can be used to calculate the unit costs shown in Table 7.

TABLE 7
UNIT COSTS

	Rupars
Cost per inpatient-week in hospital	120
Cost per consultation with a doctor	4
Cost per visit with a medical auxiliary	0.5
Cost per visit with an indigenous practitioner	0.5
Cost per immunization	0.1
Cost per vehicle-mile allowing for amortization, running costs, and repairs	5
Cost of training a doctor for 5 years	100 000
Cost of training a nurse for 3 years	5 000
Cost of training a medical auxiliary for 2 years	3 000
Cost of training a rural medical aide or field worker for 6 months	1 000

Unit costs are invaluable for the consideration of the financial feasibility of different options in health planning. Unless unit costs are reduced certain options can be ruled out as impracticable, even in the longer run. For example, in Rumania, to provide 5 consultations per annum with a doctor for the whole population would cost 200 million rupars or 10% of gross national product, without allowing for the cost of supporting staff, pharmaceuticals, diagnostic equipment and other supplies, which would probably cost at least another 10% of gross national product. To provide ten occupied hospital beds per thousand of the population would require 100 000 occupied beds at 120 rupars per week — a cost of 624 million rupars per year or 31% of gross national product. It would thus require about half the total gross national product to provide 10 beds per thousand and 5 doctor consultations per head, with supplies and supporting staff. To provide 5 consultations per annum with a medical auxiliary would cost only 25 million rupars or 1.25% of gross national product, to which the cost of supplies and support would need to be added.

If doctors or medical auxiliaries were able to provide 10 000 consultations a year, 5000 personnel would be needed to provide the population with an average of 5 consultations per annum. To train 5000 doctors would cost 500 million rupars and to train 5000 auxiliaries would cost 15 million rupars. If the latter programme were phased over 10 years the cost would be 1.5 million rupars per annum or about 3% of the government health budget. If it were possible to train 5000 doctors over 10 years it would cost 50 million rupars per annum — more than the whole government health budget. The use of staff costs to present choices to the health administrator is discussed further in Chapter 8.

Unit costs can also be calculated for different health units so that comparisons can be made between them. Such an analysis for consultation rates and costs per inpatient-week is shown in Table 8.

There are many reasons for variation in cost. The cost per inpatient-week will vary according to occupancy, turnover, the case mix, and the

TABLE 8
COMPARISONS OF UNIT COSTS

	Rupars
<i>Costs per inpatient-week</i>	
Teaching hospital A	250
Regional hospital B	170
Regional hospital C	140
District hospital D	80
District hospital E	50
<i>Costs per consultation with doctor</i>	
Urban health centre H	7
Urban health centre I	5
Rural health centre J	3
Rural health centre K	2
<i>Cost per consultation with an auxiliary</i>	
Urban health centre O	1.5
Urban health centre P	1
Rural health centre Q	0.3
Rural health centre R	0.4
Rural dispensary S	0.2

sophistication of diagnosis and treatment. Consultation costs will vary according to case load and case mix, as well as the sophistication of diagnosis and treatment. The calculation of unit costs helps the health administrator to analyse how different parts of the budget are being spent and encourages him to examine how far differences can be justified or whether they need to be corrected. In particular, how far is it justifiable for the urban population to receive a much more sophisticated level of service than the rural population?

RELEVANCE OF THE EXAMPLE

The above illustration is not untypical of many developing countries. Various factors have contributed to this situation. First, many developing countries have inherited a pattern of health services established by the colonial powers and designed to serve the needs of the expatriate population. Secondly, developing countries have followed the developed countries in placing a heavy emphasis on the training of doctors rather than other health personnel — partly in the belief that the current higher levels of health attained in the more developed countries are primarily due to their higher doctor/patient ratio. Thirdly, there has been a heavy emphasis on hospitals, again owing to the example of the developed countries, reinforced in this instance by the prestige of high-technology medicine and by the not-always-disinterested willingness of donor countries to give hospitals and hospital equipment to developing countries. Fourthly, the more prosperous and articulate urban population has sought to maintain and improve the urban services while the needs of the less articulate rural population have tended to be relatively neglected.

CHAPTER 6

THE FINANCING OF HEALTH SERVICES

In the illustration in Chapter 5 it was assumed for simplicity that there were only two methods of financing services — by taxation and by private payment. In many countries the methods of financing health services are far more complex, though the distinction between services free at time of use (indirectly financed) and services for full payment (directly financed) is fundamental — representing extremes between which there are many possible intermediate positions of part payment for all or some services.

The different methods of financing health services can be classified as follows.

Indirect financing

- (1) Government, central and local.
- (2) Compulsory insurance, any government subsidies being counted in (1) above.
- (3) Voluntary insurance, any government subsidies being counted in (1) above.
- (4) Employment insurance, the contributions being counted in (2) and (3) above.
- (5) Charity donations raised inside the country, any government subsidies being counted in (1) above.
- (6) Foreign aid.

Direct financing

Payments by recipients in return for services, excluding insurance payments to (2) and (3) above, but including payments for services to (1), (2), (3) or (4).

The agency that spends the money may not be the agency that raises it. For example, central government may make grants to local authorities to help them provide health services. Central or local government may make grants to employers who provide health services, to universities to

finance training and research, or to voluntary bodies such as missions or charity hospitals. Government may also contribute to compulsory or voluntary health insurance, or it may allow the contributions paid by individuals to be deducted from income before income tax is assessed. Foreign aid may be paid to government, charities, universities, research institutes, etc. There are many more possible ways in which funds may flow between different accounting units.

The methods by which health services are financed are relevant for health policy in two different ways. First, it is important to examine what different groups of the population are ultimately paying towards the cost of health services and how this compares with the value of the services they receive. Secondly, the method of financing can itself have major effects on what is provided and to whom it is provided. Of special importance for the planning of health services is who ultimately controls the spending (the government, social security funds, insurance companies, profit or non-profit hospitals or other bodies) and how that control is exercised. There may, for example, be a variety of different agencies each servicing different groups of the population in the same geographical area, or spending may be controlled by only one agency. Also important is the method chosen for paying providers (such as hospitals and professional personnel). Financial incentives can influence the orientation of services (for example, the emphasis given to prevention as against cure), the setting where care is provided (inpatient, ambulatory or domiciliary), the level of technology used, the quality of care provided, the geographical distribution of health resources, and last but by no means least the cost of providing the services.

The reasons why a government may decide to organize a health service are quite distinct from the reasons why a government may decide that it is socially advantageous that services should be free at the time of use. It would be quite possible for a government to employ staff to provide a service yet charge fees to users to cover the whole cost. A government might ensure the availability of free services to the whole population either by paying fees to providers for their services or by paying premiums to an insurance agency, which in turn pays the providers. Alternatively, it might establish a separate compulsory insurance scheme or, by subsidies or other means, encourage the provision of free services by employers or the establishment of a voluntary insurance scheme.

The provision of health services free (or at less than cost) normally changes the way in which the cost of health services is distributed among the population. It may redistribute income — in kind. It also changes the use that different sections of the population make of the services. Thus, both the paying and the using alter the distribution of total con-

sumption or the level of living of different sections of the population. In addition, particular forms of taxation or compulsory insurance contributions may have indirect economic effects. For example, taxation of particular goods may lower their consumption and thus their production.

If people have to pay for health services at the time of use, what they buy will depend on their perceived need for services and the accessibility of the services they want to use. But it will also depend on the prices charged for services and the resources available to the purchaser (income, savings, and access to credit). In general, for any given perceived need, the higher the price in relation to available resources the less will be bought, and the lower the price the more will be bought, up to the point when demand is satisfied.

The proportion of income spent on health services tends to increase with rising income. For any perceived need, more is likely to be bought by the richer than the poorer. The richer will be willing to pay for health services even when the affliction seems minor and to seek help at an early stage of disease. They will probably be willing to pay for such preventive services as they are advised would be helpful in protecting their health. If the cost of using health services is high in relation to their incomes, the poor will use them only when they regard it as desperately important to do so. They will hope that illnesses will cure themselves, as many do, and postpone seeking help for payment until they have been seriously ill for some time. At that stage, they will often be willing to go into debt if this is necessary to obtain services. The poor are unlikely to be willing to pay much for preventive services even when they are aware of the usefulness of them, in the hope that they will be lucky in avoiding illness without these services.

As illness restricts earning capacity, those who have no savings and cannot borrow will be least able to purchase services when they are seriously ill. On the other hand, poor families are willing to make great financial sacrifices to obtain services. This is shown in developing countries by the extensive payments made by the poor in cash or in kind to traditional practitioners and midwives and by the amount they are prepared to spend on herbal medicines. Though the help received from these services may be limited, people suffering pain are prepared to go to great lengths to pay for any services that may give relief. Indeed, in some societies it is believed that services that are paid for must be better than free services. Moreover, some people may prefer to pay because it confers a right and discharges any sense of obligation.

Where health services are partly or wholly paid for by government, the effect on the distribution of income depends on who actually pays the taxes that finance them, i.e., on the *incidence* of taxation. In some developing countries the revenue from some specific taxes (e.g., on alcohol or cigarettes) is used to finance health services. In such cases the incidence of taxation can be calculated for these particular taxes. Except in these special circumstances it is seldom possible to distinguish the taxes levied to raise money specifically for health services, so it normally has to be assumed that the incidence of taxation for the health services is proportional to the incidence of taxation as a whole.

Establishing where the burden of taxation ultimately falls between different income groups and sections of the community is more subtle than appears at first sight, because those who are required to pay the tax may “shift” the burden of it on to others. For example, if producers of a particular commodity are required to pay taxes levied on what they produce, they may try to shift the burden of the tax on to their workers by paying lower wages. This is more likely to be possible in developing countries where the trade unions are weak. Alternatively, they may try and shift the tax on to consumers of the commodity by raising prices. The extent to which they will be able to do so will depend on how much less would be bought at a higher price. If, for example, exactly the same amount would be sold at a higher price, the whole cost can be shifted on to consumers. Here the incidence of the tax on different income groups will depend on who buys the taxed goods. The burden of a tax on luxury goods would fall wholly on the better off, while the burden of a tax on goods bought by all income groups will depend on what proportion of their income the different groups spend on these goods. If the tax cannot be shifted in whole or part either to consumers or to workers, producers have either to pay the tax by reducing profits or to stop producing. Between these extremes the burden of the tax may be shared.

When a tax is levied on an exported commodity, the amount of which produced by the developing country is only a small part of the total amount on the world market, it will not be possible to raise the price, and the burden of the tax will fall on the producer or his workers. If, however, the particular country is producing a high proportion of the total world amount, it may be possible, at least in the short run, for all producers to raise their prices and shift the burden of the tax on to those who buy the commodity abroad.

While taxes on commodities may be shifted on to consumers at home and abroad or on to workers, taxes on personal income are usually

assumed not to be transferable, and this assumption is made in this book. If employees demand and obtain higher pay because of higher taxation, the tax will fall on employers who are likely to try and shift it in turn on to the prices of the goods they produce or of the services they provide.

It is important to examine whether a particular tax takes a lower proportion of income the larger the income (*regressive* tax), a higher proportion the larger the income (*progressive* tax), or the same proportion from all income groups (*proportional* tax). If the same amount is paid irrespective of income (a head tax or poll tax), the tax is heavily regressive. An income tax that takes a higher proportion from each successive band of income — the kind applied in most of the developed countries — falls disproportionately on the richer, provided all income is declared. If the rich are more skilled than the poor in concealing part of their income or in evading tax in other ways, such a system of taxation, though in theory progressive, may in practice be regressive.

Taxation is often assumed to be regressive in developing countries, that is to say, it falls more heavily on the poor than the rich. Comprehensive systems of progressive income tax are difficult to run efficiently in developing countries, where transactions may not all be documented, and may be more open to corruption or evasion than other forms of taxation. Thus a high proportion of revenue comes from taxes on commodities, and it is assumed that the poor end up paying a higher proportion of their incomes on this taxation than do the more prosperous.

It is extremely difficult to make reliable calculations of the incidence of taxation. Such studies as have been undertaken, using a variety of different assumptions about incidence, have not tended to support the assumption that taxation in developing countries is generally regressive. In a review of 44 studies covering 22 countries, it was found that in 12 of them no general impression of the degree of progressiveness could be obtained.

Of the remaining 32 studies, 22 suggested some progressivity in the effective tax rate schedule. This progressivity pattern was often an uneven one and frequently did not extend up to the highest income or expenditure brackets or started only from the second or third income class. The degree of progressiveness of the tax rates also varied from steep (however defined) to moderate. The results of 8 other studies could be characterised as suggesting some wandering proportionality in the rate pattern. These countries are mainly in Latin America. The taxes of only two countries (Greece and the Philippines) could be characterized as regressive.¹

¹ DE WULF, L. Fiscal incidence studies in developing countries: survey and critique. *International Monetary Fund staff papers*, Vol. XXII, No. 1, March 1975, p. 70.

The even smaller number of studies of the distribution of taxation between the urban and rural population or the agricultural or non-agricultural population suggest that the rural or agricultural population tend to pay a lower proportion of income or expenditure in taxation.²

The provision by government of free or subsidized health services does not necessarily result in a redistribution of income from the richer to the poorer. It depends, as we have seen, on who ultimately pays what taxes, and it also depends on who uses what services. Ease of access may be an important determinant of the latter. To a considerable extent there is likely to be a redistribution among the poor — from the poor who are well to the poor who are sick. There may even be redistribution from the poorer to the richer if the latter have access to expensive services that are partly paid for by the bulk of the rural population, for whom no accessible services are provided.

When health services are paid for by compulsory insurance contributions, only those who have paid contributions (or those for whom contributions have been paid) and their families are normally entitled to free or partly free services. Contributions may be required to be paid by employees in all or certain specified occupations, industries, or firms or by employees earning above a specified income or by employees in particular geographical areas. A variety of requirements or combinations of requirements are possible. In addition, employers may be required to pay contributions, and the government may subsidize the scheme. Only with considerable difficulty can self-employed or non-employed persons be brought within such a scheme.

Employees' contributions may be flat rate or related to earnings. Flat rate contributions, like head taxes, are very regressive. Contributions proportional to earnings may also be regressive if there is a "ceiling" of income beyond which the contribution remains constant. Moreover, income in kind and from profits, rents, and investments is not subject to contribution. Contributions from employers may be shifted on to the consumers of the goods or services by raising prices or on to employees by lowering wages as in the case of taxes on commodities. Contributions by employees are generally thought not to be shifted. As in the case of government-financed services, the total effect of a scheme of compulsory insurance on the redistribution of income between different income groups depends not just on who pays but on who receives what services.

Health services may also be paid for by voluntary insurance schemes. If employers pay part or all of the cost they may be able to shift their contributions on to consumers or their workers, as when contributions are compulsory. Contributions paid by the insured person cannot be

² *Ibid.*, pp. 72, 115.

shifted. It is unlikely that in a voluntary scheme contributions will be related to income or earnings; they are more likely to be flat rate. If the same contribution is payable without any rating for risk, the scheme redistributes resources from those who use the health services less than the average to those who use health services more than the average — from the well to the sick.

Employers may pay voluntarily or be required to pay for health services received by their employees. Alternatively, they may themselves provide hospitals and dispensaries for their employees. In many countries the law requires specified employers with more than a stated number of employees or in certain activities (for example, mines or sugar estates) to provide defined health services. Once again the employer may attempt to shift the cost on to consumers at home and abroad in higher prices or on to employees in lower wages.

Subscriptions to charities are likely to come mainly from some of the more prosperous individuals and from companies; they thus usually redistribute resources in favour of the poor. But some charities are established to help specific economic and social groups who are not poor by the standards of the country. If tax relief is given to charities or individuals contributing to charity, then charities are to that extent being subsidized by the government.

Foreign aid or gifts from abroad (for example, to mission hospitals) do not affect the internal distribution of income but do affect the internal distribution of consumption to the extent that particular persons benefit from the gift.

Gifts may not always be disinterested. For example, the gift of a hospital—particularly a teaching hospital—results in health service staff becoming familiar with equipment and supplies provided by the donor country. This will encourage the staff to reorder and use elsewhere the equipment and supplies with which they have become familiar. If satisfactory equipment or supplies could be obtained more cheaply from other foreign suppliers or from within the country, purchasing from the original donor country will involve more costly imports.

Gifts can also distort health service priorities. In the long run the major cost of a hospital is not the capital cost but the running cost. It is therefore unwise for a government to accept the gift of a hospital if it lacks the manpower to staff it or has different priorities for the use of the health service budget in the long run. A hospital given to a voluntary body may eventually lead to a demand for government subsidies to help finance its running costs.

The provision of free or subsidized services normally increases demand. In fact the demand often increases so much that it substantially exceeds supply. Thus instead of rationing by price there is rationing by queue. Willingness to wait, and for some willingness to travel, may not result in a socially advantageous distribution of health resources. Those whose needs are most urgent may be least able to wait, travel, or queue. Moreover, when there is substantially greater demand than supply, there are obvious opportunities for favouritism and corruption. The extent of these problems could be reduced if more resources were available or if resources were deployed in a different way to provide services nearer the user and at lower cost per unit of service. The latter solution is discussed in Chapter 8.

Government-financed services

The provision of a free "universal" health service financed from taxation and theoretically available to all does not necessarily result in the service being available to the poor. For example, where services are heavily concentrated in urban areas, they may not be accessible to the poor living in rural areas.

One obvious way of securing greater equity in the distribution of services would be to provide more in rural areas and fewer in urban areas. But reducing expenditure on urban services by closing regional or district hospital beds or reducing their staffing would encounter strong opposition from both users and staff and thus be politically contentious. Moreover, it would involve waste of the investment made both in building hospitals and in training staff for hospital work. A less politically difficult choice may be to introduce and steadily increase charges for services in urban hospitals both to raise revenue and to restrain demand. A reduction in the number of staffed beds in urban areas due to decreased demand may then be more acceptable. Users referred from rural areas might be enabled to travel free and exempted from the hospital charges.

Although it is intended that all patients should go first to primary health care services, patients often go direct to secondary services without any referral because they think these services are better. Such self-referred patients can be required to pay high charges to discourage the practice. Similarly, charges can be made for consultations with doctors while consultations with auxiliaries are free. Cases referred by auxiliaries to doctors could be excluded from such charges.

Charges can also be used to discourage the use of services regarded as of low priority so that resources are released to provide services regarded as of higher priority. For example, services to young children

and their mothers can be free of charge, while charges are made for older children and other adults. Preventive services can be free and charges made for some or all curative services. Services for infectious diseases can be free, while charges are made for services for other diseases. The difficulty with this, however, is that patients are unlikely to know whether their disease is infectious or not until they have presented themselves for treatment.

The main difficulty with charging is to find a way of ensuring that those who are too poor to pay can still obtain services. The administrative costs of operating sophisticated means-testing systems can be high. Too much of the time of personnel can be absorbed in assessing charges rather than providing services. Such systems can be easier to apply in small rural communities since the community itself can be made responsible for deciding to whom free services should be provided.

A further possible strategy for encouraging preventive services and restricting the spending of limited health resources on curative services is to place on local authorities the responsibility of providing curative services while the central government retains the main taxing powers and finances preventive services. Each local authority, with its more limited taxing powers, would then have to decide what curative services to provide with what staff and whether to provide them free or to charge some or all users.

Compulsory insurance for part of the population

When compulsory health insurance is started in developing countries, it usually covers only part — generally a small proportion — of the total population. Owing to the formidable administrative difficulties of attempting to collect contributions from those engaged in subsistence agriculture and casual employment, those covered tend to be in regular employment — particularly salaried employment. Coverage tends therefore to be heavily concentrated in urban areas except for mines and certain large agricultural enterprises with regular employees. When the scheme is introduced, it is often intended to extend coverage at a later stage to an increasing proportion of the total population, as has happened in more developed countries.

Often the demand for compulsory health insurance comes from the representatives of better-paid employees because of dissatisfaction with the services provided by government and charitable agencies — the inconvenience of queueing, the limited time available for consultation, and the loss of working time involved in using the services. They seek the advantages enjoyed by private patients — direct access to a doctor, free choice of doctor, less waiting, no limitation on the drugs the doctor

may prescribe, and better hospital facilities. These employees are willing, with the help of their employers' contributions, to pay regularly when they are well so that they can have access to what they see as better and more convenient health services when they are ill.

At first sight, there would seem to be great advantages in introducing compulsory health insurance for part of the population. If those covered and their employers pay separately for their own services, the services financed out of taxation can be shared out among fewer users. People are willing to pay for better health services because they can identify what they are paying for. Governments may therefore be able to raise more money from the combination of compulsory insurance and taxation than from taxation alone.

But the longer-term effects of such a scheme depend on what services are provided, who controls them, and the method of payment selected. The scheme may directly employ doctors and other personnel and build or acquire hospital and other health facilities. Alternatively, it may enable insured persons to purchase from the private sector. Thus, hospitals are paid per bed per day (with or without charges for specific extra services), doctors and dentists are paid fees for their services, and the cost of pharmaceuticals may be reimbursed. Either the insurance pays the provider directly or patients pay and claim reimbursement.

If the insurance fund or ministry responsible (which is often not the ministry of health but the ministry of labour) accepts this level of charges, providers will receive more per patient than they receive from the average private patient because there are no reduced charges or bad debts. The average doctor will treat more patients and treat them more frequently. Thus, the effect of the scheme is to raise the earnings of doctors in urban areas, making it that much more difficult to attract doctors to work on government salaries in rural areas. Thus greater numbers of trained health personnel are attracted to mainly curative work in urban areas, including those who have previously worked in rural areas. The attractions of urban living for trained health service manpower are already great, and opportunities for higher remuneration will add to these attractions. Similarly, hospitals will obtain higher incomes because of higher occupancy and full payment for all services and will thus be able to extend their facilities. They may also attract nursing and other qualified staff from the government services, including those working in rural areas. If the government raises the salaries in its own services to try and retain its staff, it will be able to employ fewer out of a given budget.

Once the insured have paid their contributions, the cost of using the health services may be only the cost of getting to them; thus demand increases. In addition, doctors can influence to a considerable extent

the demands made by patients. Once a patient has presented himself for treatment the doctor is in a position to decide what health resources are needed to provide it — whether a hospital admission is required, what diagnostic tests to order, and what drugs to prescribe. The open-ended commitment of fee-for-service payment often leads to excessive services and the use of high-technology services where lower-technology services would be appropriate. The possibilities of abuse are greatest where doctors own or have a financial interest in hospitals, pharmacies, and laboratories. The extent to which such opportunities are taken depends on the ethical standards of the professions involved.

In several countries different social security funds have been established to cover particular groups — the police, the army, civil servants, etc. Separate hospitals have often been provided for the insured persons covered by each fund. The result has been that costly equipment has been duplicated and high travel costs have been imposed on insured persons travelling not to the nearest hospital but to that owned by their particular fund.

In some countries compulsory insurance has only or mainly covered hospital inpatient services. This has resulted in care being provided in hospital unnecessarily, partly because the doctor knows that this is cheaper for the patient, partly because it is more convenient for the doctor to have his patients gathered together, and partly because the doctor can charge higher fees.

In developing countries, which are short of trained health personnel and facilities for treatment, serious distortions in the satisfaction of health priorities can result from the establishment of compulsory health insurance schemes giving partial coverage of the population. Payment systems for professionals that are unrelated to the number of services (such as salaries or capitation payments with limited lists) can in theory ensure that remuneration from the health insurance scheme is not higher than that for comparable work in the government service. Payment on a part-time salaried basis can, however, be distorted into what is in effect a system of payment per consultation if the medical association is able to insist that its members see only a stated number of patients for each hour they are paid. Capitation payment is not capable of being manipulated in this way.

A strong and prestigious urban health insurance scheme can also influence the orientation of medical education towards curative and specialized services rather than towards the major needs of rural populations. Medical education, particularly at the stage when the doctor learns his clinical practice, can be a potent influence on social values and on what is regarded as important medical work. A doctor trained in specialized curative medicine will not readily accept a role of leadership in mainly preventive and promotive work in rural areas.

In addition, health insurance can lead to substantial imports of expensive proprietary pharmaceuticals, many of them with no clear advantage over cheaper standard products provided in the government service, but better presented and convincingly promoted to doctors by the representatives of foreign firms. This can result in a heavy drain on foreign currency reserves with serious consequences for countries already faced with a balance of payments deficit. Moreover, when these proprietary drugs are widely prescribed, patients using the government service may come to believe that the standard drugs they receive from the government services are inferior. Thus in developing countries there is a strong case for establishing a limited list of pharmaceuticals that can be imported.

The regularly employed may be dissatisfied with the standard of government health services in urban areas. But these services may still be provided at several times greater cost per head than services provided in rural areas. If compulsory health insurance leads to still more costly urban services, it may be impossible to provide services at comparable cost per head in rural areas for generations. The establishment of health insurance for the better-off section of the population diverts resources in the reverse direction to the requirements of social equity. Moreover, if employers are able to shift their contributions on to the prices of goods purchased in part by the rural population, the latter are forced to pay part of the cost of the more expensive service enjoyed by the urban population.

Thus a country is ill-advised to consider the introduction of a compulsory health insurance scheme unless or until there is sufficient trained manpower to work in the scheme without damage to national health priorities. The total remuneration from all sources of those working in the scheme should not be such as to make it more difficult to attract personnel to rural areas. The cost per head should be firmly held down to a level that makes it possible to bring the whole population into the scheme within 10–20 years. Until that time, it is inequitable to subsidize the scheme with funds raised in taxation. Indeed, the scheme should make a contribution towards any costs incurred by the taxpayer in training the personnel it is using. The existence of a scheme covering a minority of the population should not be allowed to distort the orientation of medical education, which should be to serve the health needs of the majority.

Voluntary health insurance

Voluntary health insurance may, in practice, be very similar in effect to compulsory health insurance, if employers contribute and if the payment of contributions by employees is made a condition of employment.

If, on the other hand, the costs fall wholly on the insured person, those paying for insurance are voluntarily increasing their capacity to purchase health services when the need arises. But when the contributions are set so high that only the richer section of the population can afford to pay them, scarce trained manpower can be diverted to provide better services for the better-off. The same effects of a fee-for-service method of payment will occur under voluntary insurance as under compulsory insurance.

If, however, premiums are low enough for the majority of the population to be able to afford them and if the services are geared to the income collected from these premiums, voluntary insurance offers a way of developing local services under the control of and with the participation of the local community. As pointed out earlier, rural people have long been accustomed to paying for traditional practitioners, midwives, and medicines. Using the modest contributions that can be locally afforded for voluntary insurance, improved services can be provided in rural areas. Such services may be based on farmers' cooperatives or other local institutions. Developments of this kind can be encouraged by government subsidies. An example of rural voluntary health insurance is the Savar project in Bangladesh.

Although only a fraction of the cost of the services is met by insurance subscriptions, direct participation in the provision of their own health care has already produced a distinct change in the attitude of the villagers towards the health services, which have come to represent value for money rather than a public dole.³

Employer-financed services

It is advantageous to encourage or require employers to provide health services for their employees, so long as such services do not make excessive demands on scarce trained manpower and are comprehensive and closely coordinated with local services. But there are similar dangers from an extensive provision of employer-financed services as from health insurance for part of the population if the provision is out of scale with what could be afforded for the whole population. Moreover, such services are often viewed with suspicion by employees who suspect that they are being run in the employers' interests rather than their own. For example, employers may be suspected of bringing pressure on doctors to refuse certificates of sickness when they should be granted. Thus there are advantages in such services being jointly controlled by employers and employees.

³ DJUKANOVIC, V. & MACH, E. P., ed. *Alternative approaches to meeting basic health needs in developing countries*. Geneva, World Health Organization, 1975, pp. 32-33.

Whether paid for by voluntary or compulsory health insurance, the private sector can become so extensive that it frustrates the attempts of government to establish and enforce priorities in the use of health resources. Where qualified health personnel are in short supply and a substantial proportion of them work in the private sector, potential earnings in the private sector may come to determine the level of pay at which the government can attract and retain personnel. Indeed, it is the health worker's estimate of potential career earnings in the private sector that will be the main economic influence on the distribution of manpower. In such circumstances, it is inadvisable to create or continue any tax concessions that help the private sector, such as allowing health insurance contributions or expenditure on health services to be deducted from taxable income, exempting private hospitals from property or other taxes, or exempting imported pharmaceuticals from import duty.

Financial incentives, good housing, and other amenities are seldom very successful in attracting highly trained staff to work in rural areas. In some countries health staff employed by the government have been given rights to private practice as an additional incentive to accept a rural posting. This can have undesirable consequences. It naturally leads to a demand for parallel rights to be given to government staff working in urban areas. If this is conceded, urban posts become more attractive than rural posts because of the higher potential earnings from private practice in the cities. Even if the urban demand is resisted, staff working in rural areas may give hurried and in other ways unsatisfactory service during duty hours and encourage patients to visit them privately after duty hours. It can also lead to a reduction in the hours actually worked for the government service. It is also likely to result in users of government services feeling that they are being given "second best", even when this is not the case.

Direct control could be exercised by requiring practitioners to hold a special licence to engage in private practice or by closing specific towns or cities to new entrants to private practice. But the issue of a limited number of licences for private practice would probably lead to an increase in the fees charged and certainly in the income of those to whom licences were granted. If monopoly rights of this kind are granted by the government, there is a case for making a substantial annual or quarterly charge for a licence so that average remuneration in private practice is no higher than average remuneration in the government services. The income from licences could make a modest contribution to the budget of the government health services.

The fundamental problem is inequality of income and wealth. It is inevitable that those who are rich by the standards of their society will want to buy more health services and more sophisticated health services. The poor usually aspire to have what they see the rich using, even if these services are oversophisticated, unnecessary, and unable to produce fundamental solutions to health problems. Gross inequality of income and wealth is irreconcilable with the equitable distribution of scarce health resources.

CHAPTER 7

COST-BENEFIT AND COST-EFFECTIVENESS ANALYSES

To make a plan for health services, it is necessary to decide what priority should be given to different types of programmes. How far, for example, should resources be devoted to health education, or immunization against particular diseases, or other possible uses of health service resources? Decisions on priorities are taken daily — by default, if services are allowed to go on doing what they have always done.

Cost-benefit analysis is an aid to systematic thought about the question of what should be done — on the relative merits of different programmes. The attempt is made to assess the benefits and compare them with the cost of obtaining them. Cost-effectiveness analysis is an aid to deciding how to achieve a given level of performance at minimum cost, once it has already been decided that a particular objective should be pursued.¹ Thus cost-benefit studies attempt to select programmes by comparing benefits with costs, while cost-effectiveness studies are concerned with how to achieve a stated level of performance at minimum cost (or to obtain the maximum performance from a given budget).

In theory, the costs and benefits (in terms of improved health or the contribution to wider development objectives) of every possible health activity should be compared, and those that give the largest benefits in relation to cost should be selected. Any given budget for health would

¹ If the objective is broadly defined — for example, to improve health — cost-effectiveness can become almost interchangeable with cost-benefit (assuming that health improvement can be measured), except for the fact that those who do cost-benefit studies place particular emphasis on trying to express benefits in monetary terms wherever possible. In this chapter the discussion of cost-effectiveness is confined to narrower objectives such as reducing the incidence of one disease by a stated amount, achieving a stated percentage of acceptors of family planning, or ensuring that a desired proportion of the population is immunized.

then be distributed between programmes by including first those with the largest ratio of benefits to cost, then those with the next largest, and so on until the budget was fully allocated. Some programmes would therefore not be included at all because the benefit they provided was too small in relation to their cost. They would be kept in reserve to be introduced when the programmes with greater benefits in relation to cost had been successfully implemented, or until more resources could be devoted to the health service.

Cost-benefit analyses of a restricted number of options are only a limited aid to decision-making, because in theory comparisons need to be made between all possible uses of resources.²

MAKING A COST-BENEFIT ANALYSIS

A number of problems are encountered in undertaking a cost-benefit analysis. The first is to define the costs of particular programmes. If the programmes already exist, their costs can be estimated by the methods described in Chapter 5 for making functional analyses of health service expenditure. But it may still be possible to find a way of providing a more effective programme at the same cost, a much more effective programme at a somewhat higher cost, or an equally effective programme at a lower cost. If programmes do not already exist, the resources needed to provide them for the target population need to be defined so that they can be costed. Cost units of the type shown in Chapter 5 (Table 7, p. 71) may be useful for this purpose.

A programme may, for example, need a specified number of hours of work per annum from persons with different levels of training. (Strictly speaking, original training costs should be spread over the working life of trained persons and added to the annual costs of employing them.)³ It may require a specified number of vehicle miles of travel and specified equipment.

Costs need to be estimated even if the programme would make use of personnel who are already in the field and engaged on other activities. If resources are to be deployed for a new activity, they are no longer

² There is a considerable literature on cost-benefit analysis and its uses and limitations. For further reading the following might be helpful:

KLARMAN, H. E. Present status of cost-benefit analysis in the health field. *American journal of public health*, 57: 1948-1953 (1967).

PREST, A. R. & TURVEY, R. Cost-benefit analysis: a survey. *The economic journal*, December 1965, pp. 683-731.

WEISBROD, B. A. Concepts of costs and benefits. In: Chase, S. B., ed. *Problems in public expenditure analysis*. Washington, DC, Brookings, 1968, pp. 257-262.

SORKIN, A. L. *Health economics*. Lexington, Lexington Books, 1975, pp. 101-118.

WILLIAMS, A. The cost-benefit approach. *British medical bulletin*, 30: 252-256 (1974).

ROBERTS, J. A. Economic evaluation of health care: a survey. *British journal of preventive and social medicine*, 28: 210-216 (1974).

³ What people are paid does not necessarily record their social value, but it is often the only readily available way of measuring their value.

available for the tasks previously being undertaken. In some cases, however, a further activity can be added on to an existing activity at very little cost. To vaccinate against several diseases instead of one does not cost that much more, apart from the cost of the vaccine.

Much more difficult than the task of working out the cost is the problem of quantifying the benefits by a common yardstick and estimating how far these benefits are likely to be obtained for any specified use of resources. Some programmes will have long-term and complex effects. They will not just lead to a reduction of mortality and morbidity but open up fertile lands for cultivation or more intensive cultivation and thus lead to greater economic growth. Birth rates may be raised or lowered with major implications for the size and demographic structure of the population for many years to come. Other programmes may have much more limited and short-term effects. They may, for example, do no more than reduce morbidity in the year in which they are applied.

For most types of programme the first step in attempting to measure benefits is to estimate quantitatively the expected reduction in morbidity and mortality. The following questions must be asked. Which age and sex groups will be affected and to what extent? Does the morbidity consist of long-term permanent disability such as blindness or of short-term spells of incapacity? Is the extent of morbidity such that those afflicted will not be able to work, attend school, or perform household tasks, and, if so, for how long? Does the condition cause acute pain or discomfort?

The main problem is to obtain reasonably reliable epidemiological data at this initial stage. There are obvious dangers in assuming that a study of the effects of intervention conducted in one culture or geographical area will necessarily be applicable elsewhere. Data may nevertheless be obtained by evaluating the success of past programmes conducted elsewhere in a broadly comparable part of the country. The most convenient data can be drawn from records of the mortality and morbidity of those who have been in contact with the health services, but the perils of using such data are well known. Small surveys of the local population may be used instead, where resources can be spared to undertake them. In field conditions, unfortunately, accurate diagnosis may be difficult. Cause of death may not be accurately known, even where there is registration of deaths. Where there is no registration, as is the case in the rural areas of most developing countries, it is even more difficult to establish the cause some time after the event.

A particular problem arises in measuring the effects of intervention to combat an epidemic disease that varies markedly in its incidence from year to year. Assumptions have to be made about the likely future incidence without any intervention before it is possible to estimate the

effects of intervention. Moreover, intervention starts chain reactions. Immunizing a proportion of the population and reducing the number of infected persons will cut down the spread of the disease in later periods, but to what extent? Simulation models have been developed on certain assumptions to study the effects of intervention in the course of time and to make comparisons with what was expected to happen if there had been no intervention.⁴ But it is not possible to be sure how far these models reflect real situations.

Studying the effects of intervention on one disease in isolation may ignore important “spillover” effects on other diseases. Certain actions (e.g., sanitation programmes) to combat the most dreaded diarrhoeal diseases will have effects on other diseases. Persons debilitated by one disease may be more susceptible to others.

Many studies attempt to compare the effects of the current prevalence of a disease with an imaginary situation in which the disease does not exist at all. For certain diseases this is a very unreal assumption in view of the limitations of present scientific knowledge. The actual problem normally facing the public health administrator is not the cost of eradicating a disease but how much to spend on trying to control it.

When intervention to reduce the prevalence of a disease has effects on both morbidity and mortality, the second step is to find some basis for comparing these two effects. It raises the age-old problem of how to measure the value of a human life (or the cost of a death) at a particular age. How should major disabilities be weighted against death? How should minor illness be weighted against major illness? What weight should be given to particular consequences such as pain and suffering? How much is the disease feared? Many solutions have been suggested to these problems but none has gained general acceptance. The political importance of a disease may be a crucial consideration, and this may be governed by what people *perceive* to be the risks rather than by the actual risks, in so far as these can be calculated.

One procedure that circumvents these questions is simply to list the extent to which it is estimated that mortality and morbidity might be reduced by different programmes for a given cost. Where a programme is preventive, the further benefit arising from the saving of curative costs as a result of the lower incidence of the disease may be estimated. It is likely that primary care services or hospitals will find good use for any resources released by a lower incidence of a disease. But this new use of the resources is a real gain.

⁴ FELDSTEIN, M. S., ET AL. *Resource allocation model for public health planning*. Geneva, World Health Organization, 1973 (Supplement to Vol. 48 of the *Bulletin of the World Health Organization*).

CVJETANOVIC, B., ET AL. Epidemiological model of typhoid fever and its use in the planning and evaluation of antityphoid immunization and sanitation programmes. *Bulletin of the World Health Organization*, 45: 53–75 (1971).

The listing of what health gains might be obtained by spending 100 000 rupars on a limited number of programmes in our imaginary country may make clear which programme local communities would prefer. For example, curbing a disease that has a substantial mortality may be preferred to curbing one that causes only minor disability and can only occasionally be held responsible for a death. The procedure of listing makes it possible to indicate ranges of possible variations in morbidity and mortality. It also makes it possible to indicate uncertainty; some gains can be listed as "possible" and others as "probable". The importance of the disease as seen by politicians can be noted. While theoretically every possible programme should be listed, the lack of information will make this impossible. Moreover, the local health services may well be unable to sustain and carry through more than a few changes or new initiatives in a particular year. The choice of costed programmes considered may be somewhat arbitrary. But it is still useful to have taken a carefully thought out decision to concentrate on A and neglect B, or to give greater emphasis to P than to Q.

Often the difficulty of evaluating benefits is such that there cannot be a "right" answer — only one that seems to accord with the social values of the community. For example, careful analysis of costs and benefits may show that particular curative programmes are of doubtful effectiveness or unduly costly for the limited health improvement that might be secured. It may nevertheless be unacceptable to the local community for these curative services to be withdrawn or for the local health service staff to refuse to see patients, even if all they can do is to give them moral support, reassurance, and a placebo. It may be judged that the acceptance of other health actions will depend on the good relations with the local community generated by a policy of seeing all who come for help. Wider political considerations cannot be neglected when decisions are made on priorities.

The intermediate "outputs" of some programmes will not be in the form of reduced mortality and morbidity at all. For example, the purpose of family planning programmes may be to reduce the birth rate. As it is difficult to find reliable information on the number of births prevented or postponed as a result of such a programme, the number of persons accepting family planning may be used as an index, and some assumptions must be made on the extent to which acceptance prevents or postpones births. Calculations have been made of the savings in public expenditure or the savings to society as a whole that result from fewer births.

Several sophisticated ways of handling data on benefits have been devised. In particular, economists have attempted to evaluate the economic effects of particular programmes and to list other relevant considerations if they cannot be given quantitative values. These methods are too complex for widespread application. Moreover they have serious drawbacks in the context of developing countries. They are described here to draw attention to these limitations. Health administrators may too readily assume that attempts to measure the economic benefits of health service programmes will provide useful guidance on priorities.

Economists distinguish between the *direct* benefits of lightening the load on treatment services and the *indirect* benefits on earnings or output. These are the primary economic effects. There may also be secondary economic effects such as making fertile land available for intensive cultivation by removing or reducing health hazards.

Direct benefits

Some preventive programmes may be shown to come very high in any list of priorities because they pay for themselves solely in terms of saving the direct costs of curative services (including case-finding and rehabilitation). The high priority to be accorded to such a programme is obvious. It releases health resources for other uses. We are concerned here not with the cost that *would* be incurred if everyone were treated but with the expenditure actually incurred. Where costs are incurred over long periods, it may be necessary to discount the costs of future years of treatment to present-day values. Discounting is discussed below.

The value of most preventive programmes, however, is less clear-cut, and the estimated saving of curative costs must be added to the savings resulting from other economic effects. The fact that the resources released are likely to be used in other health programmes is no reason for not counting them.

At this point it may be worth noting that the careful examination of costs can prevent public health administrators from falling into the trap of believing that principles that are usually applicable are always applicable. It is often said that prevention is better, and by implication cheaper, than cure. This may or may not be the case. Whether it is depends not just on the cost of curative action per person as against the cost of preventive action per person, but on the number needing cure as against the number requiring preventive action. If the individuals who will later contract a disease could be known in advance, preventive action could be confined to them. But as this is not possible preventive action has to be extended to the much larger number who *might* contract

the disease. Where the risk of disease is very remote, it may be cheaper to treat the few cases if and when they occur rather than apply preventive action to the whole population.

Indirect benefits

The usual procedure for measuring the indirect costs of a disease (and hence the indirect benefits from reducing its prevalence) is to calculate the value of lost earnings or in some cases to try to calculate the value of lost output. What loss of earnings or output does a disease cause? Average earnings in an industry or in the country are often applied to individuals affected by the disease because information is not available on their actual earnings, let alone what they might have earned in future years. The use of earnings as the basis of the calculation involves the assumption that people are paid the value of their production, which may not necessarily be the case. It is also assumed that output will fall if someone is unable to work because of sickness or death. In subsistence agriculture, another family member may make good the lost output. If there is substantial unemployment there may be no loss of production when a paid worker falls ill or dies, because another worker is readily found to take his place.

The economic loss caused by a death may be viewed in various ways.

(1) From the point of view of those who survive, part of the earnings of the dead worker went to finance his own consumption, so the economic loss is the value of his production less his consumption.

(2) For his family, the economic significance of the worker's death is the loss of the share of earnings from which they directly benefited. The loss may be partly or wholly offset by social security, insurance, or other benefits.

(3) The government sees the death of a worker as a loss of taxes collected from his earnings, a loss of output, and a possible cause of payments to be made in cash or kind to his family.

(4) For society as a whole the consumption of the dead worker is not deducted on the grounds that he was a member of society.

It is the last of these viewpoints (calculations for society as a whole) that is generally regarded as appropriate in cost-benefit analysis. The first viewpoint could lead to the absurd conclusion that society would be better off with all its members dead!

The losses of earnings or output that give a measure of indirect costs are those due both to mortality and to morbidity. The latter may cause the worker to be off work altogether for a period, or to stay at work and produce less because of debility or disability.

Calculations of earnings or output inevitably call for a definition of “production”. In some studies the definition used follows that of national accounts (see page 38) — that which is bought and sold. In other studies attempts are made to give a measure of the wife’s work, which is not bought or sold — her work in the home maintaining the household, rearing children, preparing food, etc. One way of getting an approximation of this is to value her activities at home at the average earnings of women who go out to work. An alternative is to try and measure what it would cost to employ someone to do the work that she does. Unless some way of attributing a monetary value to work around the home is found (and the principle should be applied to men as well as women), calculations of indirect economic loss from morbidity and mortality will generally be heavily biased in favour of men and against women.

A further problem is how to add together lost earnings or output occurring at different periods of time. Should earnings next year and 10 years hence be counted as of the same value as earnings this year? The procedure generally used by economists is to discount the earnings or output of future years. A rate of interest is used to do the discounting. For example, if 10% is taken to be the appropriate rate of interest, this year’s earnings count as 100, next year’s as 90 and those of the year after as 90% of 90, and so on, these sums being then added together. The argument for discounting is that the community would prefer economic benefits today to economic benefits next year. Waiting for benefits has a “price” and that price is the rate of interest used.

Some public health administrators may think that there should be no discounting at all. Many of their investments in health, such as health education, bring results in the longer term. Why should these be given a low value by using discounting? The question can be reformulated in another way. Are health gains this year preferred to health gains in later years? Let us assume that there are only two possible ways of spending a proportion of a health budget. One option is vaccination for smallpox, which would stop all smallpox deaths from next year onwards. The second option is to install a permanent system of pure water supply and sanitation (involving no maintenance cost), which would stop all deaths from diarrhoeal diseases from three years hence. Let us assume that deaths are the only effects of these diseases and that the number, age, and sex structure of the annual deaths is the same in both cases. Many public health administrators would give priority to saving lives next year rather than three years hence, and in so doing they would be instinctively applying the principle of discounting.

If it is accepted that there is validity in the procedure of discounting, the next problem is to decide what rate of discount to use. There is no “correct” answer to this question. Economists often make alternative

calculations using a high rate and a low rate and leave the decision-maker to make up his own mind on whether there should be discounting and if so at what rate.

Using earnings or output to measure the economic loss, without any valuation of work done around the home, inevitably has the effect of making the death of young adults entering work appear very costly compared with the death of those whose working life has nearly ended. If this type of evaluation is regarded as unacceptable, economists will reply that all they are trying to do is to measure economic losses; they are not attempting to attribute social values to individuals.

Those who find it helpful to use calculations of economic loss as part of a cost-benefit analysis should be aware of what such calculations imply, if regarded as measures of social values. For example, the death of an unemployed man who is likely to remain unemployed would be a gain for those who survive as he no longer has to be maintained on the earnings of others. At least the loss to society of his death would be nil because he had no earnings. On the other hand, the death of the highly paid manager of a distillery counts as a major economic loss for society. This method of calculation thus discriminates not only against the elderly but against low earners and the unemployed. The method has little attraction in the context of this book, which concentrates on improving the health of the poor as part of an integrated development policy. It would seem unreal to assume a level of notional earnings after the success of the development policy, especially since the gain would not be attributable to health action alone.

Other ways of valuing changes in mortality and morbidity have been devised. For example, the loss of a year of life expectancy could be given a constant value irrespective of the person concerned.⁵ But there would still be the problem of how to calculate losses from morbidity. Are two years of partial disability equal to one year of death? In economic terms, disability that stops people working for the rest of their lives (e.g., blindness in the actual circumstances of many developing countries) involves a greater economic loss for other people than does death, because the blind person is maintained by the work of others. On the other hand, in many cultures death is regarded as a disaster.

Secondary economic benefits

So far only the primary economic effects have been considered, but for some programmes long-term secondary effects may be of immense importance. What is the effect of a higher rate of child survival in the

⁵ This approach was used in a study of renal dialysis and renal transplant. See: KLARMAN, H. E., ET AL. *Medical care*, 6: 48 (1968).

long run? What is the economic effect of removing health hazards from fertile land? What are the long-term effects on the environment and on the ecological balance of using DDT? What is the very long-term effect of a decline in the birth rate caused by a whole variety of changes including the eradication of malaria? The secondary effects of health programmes were illustrated in Chapter 2 (pages 26–28).

Other benefits

Economic losses are by no means the only consequences of ill health. There is the pain and suffering of the victim. There are the psychological “costs” to the victim resulting from his loss of ability to do what he normally does and from his becoming dependent on others. There are also the burdens on relatives and friends who look after the sick and disabled and the psychological costs for them (for example, the wife who suddenly finds her husband disabled).

Economists have attempted to find ways of assigning monetary values to some of these costs — what a court might award as damages for pain and suffering, what it would cost to pay for someone else to look after a disabled person, what individuals might be willing to pay to avoid a disease, and so on. But such calculations can become very unreal. An alternative procedure is simply to list in writing the effects considered to be relevant as an aid to decision-making.

ANALYSIS OF COST-EFFECTIVENESS

Cost-effectiveness analyses are much easier to make than cost-benefit analyses because the aim is clear. The problem is to achieve a defined level of performance of an activity at lowest cost or to spend a given sum of money so that the maximum progress is made towards the desired objective. It is assumed that there are at least two ways of proceeding.

The objective may be narrow — for example, the immunization of the whole population (or an age group of the population) once a year for a particular disease. It may on the other hand be much broader — such as the provision of safe water supplies and effective sanitation to the rural population or the acceptance of family planning by couples where the woman is of child-bearing age. Examples from the curative field would be the provision of treatment for young children suffering from dehydration as a result of diarrhoeal diseases or the treatment of hernias.

In each case, the problem is to find the way of achieving the objective at lowest cost. Some ways of progressing towards an objective may bring

quick results and other ways may take more time. Discounting may be used to compare methods with different time horizons.

The whole history of medicine consists in replacing old ways of treating patients or preventing disease by new and better ways. On the whole, doctors have tended to look much more at the effectiveness of new procedures than at their cost. They would, for example, tend to prescribe a new drug that gives much better medical results for a particular condition but costs much more than the drugs previously used.

Some more expensive drugs can, however, reduce the total cost of treatment. They may take effect more quickly, so that it is no longer necessary to admit the patient to hospital, or they may reduce the average length of stay in hospital. There is thus a net saving of the direct costs of treatment from using the new drug. Indirect costs may also be saved, if the use of the new drug makes it possible for a patient to return to work earlier.

Some new surgical treatments, on the other hand, may involve much higher direct costs than earlier forms of treatment, but they may still be economically justified by the indirect costs saved by patients returning earlier to work. Transplant kidney surgery may be costly, but it is cheaper than kidney dialysis, which has to be continued for life. And dialysis at home may be cheaper than dialysis in hospital.

Cost-effectiveness analyses are not just for research studies but for practical application by the health administrator in managing his health resources at the local level. What is required is creative thinking to develop cheaper ways of solving problems. What, for example, is the most cost-effective way of controlling hookworm in children? How does the cost of a regular inspection and treatment programme compare with the cost of issuing every pupil with shoes? What is the most cost-effective way of controlling cholera? What would it cost to cut incidence by $x\%$ by regular vaccination, by vaccination when an epidemic is expected to start, and by some scheme of rural sanitation.⁶ What is the cheapest way of getting 10 000 acceptors of family planning programmes? By providing a clinic? By subsidizing supplies in retail shops? By providing subsidized supplies in slot machines? By recruiting volunteers to call from door to door, perhaps allowing them a small commission on the supplies they sell?

All over the world, care in hospitals is an expensive way of treating patients. Thus it is particularly important to find effective ways of treating patients without sending them to hospital. For example, oral fluid, provided it is given early, can be a cheap and effective weapon against

⁶ See: AZURIN, J. C. & ALVERO, M. Field evaluation of environmental sanitation measures against cholera. *Bulletin of the World Health Organization*, 51: 19-26 (1974).

dehydration in diarrhoea.⁷ Many beds in hospitals and sanatoria are still occupied by tuberculosis patients, who could receive ambulatory treatment having the same therapeutic effect at much less cost in terms of staff and overhead expenses.⁸ In 1968, nearly half a million hospital inpatients from 37 developing countries were officially registered for malnutrition. The cost was estimated at about 340 million dollars.⁹ What would be the most cost-effective way of preventing this malnutrition?

Vaccination has been proved to be an outstandingly effective preventive measure against a long list of diseases. There are estimated to be about 80 million children born each year in the developing countries who need this protection and do not get it. It is therefore of immense importance to examine every way in which such protection might be provided at lower cost and to consider the contribution that might be made by research. It can be useful to list the logical possibilities and see how far progress could be made with each of them. They would include:

- (1) producing equally effective vaccines at lower cost,
- (2) producing vaccines that give greater or longer protection in relation to their cost,
- (3) using smaller dosages and different delivery routes,
- (4) altering containers so that less vaccine is wasted in spillage,
- (5) developing new storage systems to prevent waste from failure to maintain low temperature,
- (6) using oral vaccines to reduce staff time,
- (7) giving more than one immunization at each contact,
- (8) developing faster-acting equipment (e.g., jet guns),
- (9) planning better schedules to cut transport costs,
- (10) using volunteers instead of paid staff, and
- (11) improving publicity to bring people into centres at lower cost per head.

Nothing in this list is new. The problem is partly to apply what is known and partly to find really new ways of providing the required health services at low cost in developing countries. Some of the principles underlying low-cost services are discussed in the next chapter.

⁷ PIERCE, N. F. & HIRSCHHORN, N. Oral fluid: a simple weapon against dehydration in diarrhoea. *WHO Chronicle*, 31: 87-93 (1977).

⁸ HITZE, K. L. Tuberculosis control: is modern knowledge being applied? *WHO Chronicle*, 26: 386 (1972).

⁹ BERG, A. *The nutrition factor*. Washington, DC, Brookings, 1973, p. 18.

CHAPTER 8

LOW-COST SERVICES

If health services are to be used by all who are intended to use them, they have to be near the user. This is true of curative services when the patient is actively seeking help. In the case of many preventive and promotive services, people have to be made aware that they need the services before they will use them. These services must therefore be taken to the people.

In view of the limited amount that can be spent on health services in developing countries, the only services that can hope to reach the whole population are low-cost services. Finding low-cost ways of providing secondary services is no less important than finding low-cost ways of providing primary services. A low-cost service need not be a less effective service.

In this chapter we discuss the general principles of how to provide low-cost services and where to look to find economies in resource use. How far these general principles can be applied in particular countries will depend on the local situation.

INVOLVING THE PEOPLE

The largest element in the budget of health services is the cost of staff. The cheapest way of providing any services is for people to try to provide them for themselves. Moreover, helping people to find solutions to their own problems is likely to be more effective than to provide services to solve the problems for them, provided the problems can be solved with the resources the community can command.

As pointed out in an earlier chapter, the most important health messages relate to the basic aspects of life — an adequate diet, safe water

supplies, the safe disposal of excreta, personal hygiene, and the control of vectors and rodents. In all these areas the community can do much for itself. To work with the community to change customs, beliefs, and behaviour handed on for generations is a formidable task. But this is what much of development is about. And it cannot be done without community participation.

In more developed countries, the main health education is done within the family, and this includes the use of household remedies for minor illnesses. It is only when family remedies fail or there is no family remedy for the health problem that external assistance is sought. Once basic knowledge of healthy living comes to be accepted within the family, it will be passed on over the generations. In this sense, investment in health education tends to be a permanent investment and one that can be extended once the simpler messages have been absorbed and are practised.

Some countries have found cheap and effective ways of spreading health education using methods and equipment appropriate to the environment. Leaders of health education can be selected or elected from each village as is appropriate in the particular society. They do not need to be paid, though they do need training and support. The most effective adult education proceeds by discussion and example-setting. In discussion, health problems can be seen as part of the wider problems of the community. Thus health education can also be part of the tasks of community development personnel, schoolteachers, agricultural extension workers, and many others. Health education can be promoted by politicians and religious leaders and can form part of mass literacy campaigns. To involve the community in finding ways of improving its health does not require expensive equipment or expensive staff. But it does involve political commitment and community participation.

Similarly, one or more persons from each village can be selected or elected for practical training to provide simple health care on a part-time basis (paid or unpaid). The supplies needed for this health care would have to be provided. Such village workers can, for example, give first aid, ensure that all in the village are regularly immunized, be on the lookout for environmental health hazards, and report outbreaks of serious infectious diseases. They can also be trained to know when assistance is required from professional staff. Such has been the role of the million peasant doctors who have done so much to improve the health of the population of China. Similar schemes are being pioneered in other countries,¹ though they may not be acceptable in all cultures.

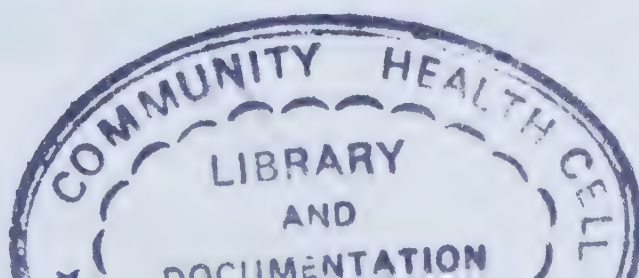
¹ See, for example:

REPOND, R. House of health. *World health*, April 1975, pp. 20-25.

GONZALEZ, C. L. "Simplified medicine" in the Venezuelan health services. In: Newell, K. W., ed. *Health by the people*. Geneva, World Health Organization, 1975, pp. 169-190.

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As pointed out in Chapter 6, community participation in the decision-making process is fostered if the community participates in financing services. It may also be fostered if the community contributes voluntary labour.

Financing and decision-making are complementary functions that reinforce each other; they place the community in a position of authority as it shoulders responsibility for its own services. In countries where this is the national approach, community leaders are well aware of local health problems. They understand the role, scope and potential of their primary health care service, and they take an active interest in its management. What is more, the health institution at the level nearest to primary care is clearly more alert to the community's needs and wishes.²

THE ROLE OF TRADITIONAL PRACTITIONERS AND MIDWIVES

For centuries women in developing countries have had their babies delivered by traditional midwives, and small payments have normally been made for this service, which, unlike many curative services, can be planned in advance. Even when a service from trained midwives is made available, many still choose the traditional midwives. Thus the quality of the service they provide is of vital importance. It is normally a better use of limited resources to help the traditional midwife improve the service she provides than to attempt to replace her with trained personnel paid for out of the health service budget. Moreover, training can be used to extend her services into advice on family planning.

Similarly, traditional medical practitioners are still widely consulted in many developing countries. Sometimes the patient will consult the organized services only when treatment from the traditional practitioner has been unsuccessful. Alternatively, the patient may be being treated by both scientific and traditional practitioners at the same time. There may be patients with symptoms caused by the traditional medicine they are receiving, and any good done by scientific treatment may be undone by traditional treatment. The traditional practitioner may also be undermining advice given in health education. Thus the service provided by the traditional practitioner cannot be disregarded.

Training the traditional practitioner, where this is appropriate, to use scientific medicine and abandon practices that are clearly unfavourable to health can make an important contribution to the health of the local population. For cultural reasons, the same health advice or treatment may be more readily accepted from traditional practitioners than from the organized service. Moreover, the traditional practitioner can be linked with the organized health service. The major part of the cost of

² DJUKANOVIC, V. & MACH, P., ed. *Alternative approaches to meeting basic health needs in developing countries*. Geneva, World Health Organization, 1975, pp. 99-100.

health service personnel is not in their training but in the salaries paid to them during their working lives. The traditional practitioner does not usually generate these continuing costs for the organized services because he works from his own base and may charge patients for the drugs he supplies. Alternatively, a limited range of drugs may be provided to the practitioner by the organized service for him to use in his practice. There are, however, dangers that the area of traditional medicine may be excessively promoted for political reasons.

DELEGATION OF RESPONSIBILITIES

The role performed by different grades of health service staff differs between countries and between practice settings, and it also tends to change with time. As medical procedures become accepted and routine, doctors delegate these tasks to nursing and other personnel. What the doctor does in solo office practice is very different from what the doctor does in the outpatient department of a large hospital. The allocation of tasks is partly a matter of tradition and partly a matter of professional restrictive practices. The extent of delegation also depends on the availability of staff with appropriate training to whom tasks can be delegated. Where the ratio of doctors to population is low, many health needs will remain unmet unless trained staff are provided to whom doctors can delegate part of their responsibility.

Delegation does not undermine the professional role; it enhances it. The more the doctor delegates the more time he has available for those tasks he cannot delegate and the more his work becomes confined to problems that staff with less training have failed to solve. In addition, more of his time can be devoted to supervising the work he has delegated and to providing continuing education to all engaged locally in activities to improve health.

But delegation is also a matter of economics. The ratio between the remuneration of the doctor and the average worker tends to be much higher in developing countries than in the more developed countries. Auxiliaries can also be trained at much lower cost than can higher grades of professional staff. Thus, it is that much more important to ensure that the doctor's time is used only for tasks that require his skill and knowledge. The same is true of other highly trained health professionals — dentists, pharmacists, health inspectors, nurses, sanitary engineers, and many others. There is a strong case for every highly trained professional grade to be matched by a corresponding auxiliary grade. Furthermore, as their training is shorter, auxiliary staff can be working in the field much earlier than more highly trained personnel.

In urban settings specialized auxiliaries can be used to give a higher quality and wider range of services. But in rural settings little specialization may be practicable if the health budget can provide for only one or two full-time health workers with continuing access to the whole population of a local community. In such circumstances, any delegated responsibilities will have to be undertaken by multipurpose trained workers. If such workers are recruited from the village where they are to work after training they will have the advantage of knowing the local culture and communicating better with the local community.

PRIMARY HEALTH CARE

The actual choices that may face a country in planning the supply of health manpower to provide primary health care may be illustrated in the following example from our imaginary country Rupaniam. It is assumed that (after allowing for the costs of central administration, secondary services, education, training and research) the annual amount available for primary health care services for a population of 100 000 is 300 000 rupars. Out of this, 100 000 rupars are needed for supplies, transport, and all expenses, leaving 200 000 rupars for staff costs. In practice, many of these other costs are a consequence of the staffing pattern selected, but it is assumed for simplicity that these other costs can be taken as given. Possible staffing options are shown in Table 9.

TABLE 9
STAFFING OPTIONS

Grade	Annual cost per staff member (rupars)	Possible numbers in post		
		Option A	Option B	Option C
I University training for 5 years	20 000	10	6	2
II Secondary school plus 2 years' training	6 000	0	10	10
III Primary school plus 6 months' training	2 000	0	10	50

One university-trained staff member cannot hope to make much contact with 10 000 persons. And only limited contact could be made by one grade II staff member and one grade III staff member per 10 000, even with part-time help and support from a university-trained person. Option C provides two grade III staff members per 4000 or one per 2000 with the support of one grade II staff member for each five in grade III. Only option C or some variant of it provides some prospect of ready access of the whole population to the primary health services. The extent to which this can be achieved in practice will depend on the dispersal of the population to be served.

The preparation of staffing options on the lines of Table 9 is the key to the planning of local services. Decisions taken on staffing will determine the extent to which health workers can be specialized, the precise functions they should perform, and therefore the training programmes that are required. The content of such programmes will depend on the priorities of the health plan and what a student with a basic education can be expected to learn and put into practice. Indeed, the amount a student can learn may determine for practical purposes the boundary between primary and secondary health care within the organization of services. From the staffing pattern will also flow decisions on what buildings, supplies, and other forms of support are needed. When these consequential costs have been calculated, some alteration of the initially chosen staffing pattern may be necessary to fit the cost to the budget.

SECONDARY HEALTH CARE

In the more developed countries, the majority of secondary care is generally given in hospitals, and increasingly the hospitals in which it is provided tend to be large — 500 beds or more. The larger hospital offers the opportunity for a high degree of specialization and for achieving the fullest use of expensive specialized equipment. The larger the hospital and the more specialized its work, the larger the catchment area it needs to serve. The higher average transport costs for staff and patients may be justified by the quality of service that a large hospital should be able to provide.

In the developing countries, where the bulk of the population live in rural areas with limited public or private facilities for long-distance travel, such transport as is available is costly, except for the few patients who can be transported to hospital in vehicles travelling for other purposes. Moreover, inpatient care must be provided much more selectively if it is not to absorb an excessive share of the health budget. It must be confined to those with a high probability of deriving clear and lasting benefit from it.

For these reasons, hospitals should on average be smaller in developing countries than in more developed countries, and they should not be geared to provide the most sophisticated technology. Costs can be saved if relatives accompany the patient and take responsibility for preparing food and providing basic patient care.³ But many developing countries have followed the example of more developed countries and concentrated a high proportion of their health service expenditure on

³ See, for example: BEHRHORST, C. The Chimaltenango development project in Guatemala. In: Newell, K. W., ed. *Health by the people*. Geneva, World Health Organization, 1975, p. 35.

large urban hospitals, many of them teaching hospitals, equipped to provide tertiary care with high technology. These hospitals have often been provided before smaller district hospitals have been developed and as transport is not normally developed they tend to be used only to a small extent as regional hospitals; they are mainly used to provide secondary care to the urban population. Moreover, they are often used for patients who do not need their special facilities — the chronically disabled, children suffering from malnutrition, and patients with minor illnesses who could be treated in a much simpler hospital or at home. In some countries, the outpatient departments of regional hospitals are even used to provide primary care.

There are still developing countries that provide sanatoria for tuberculosis cases or isolation hospitals for lepers. Such hospitals are no longer necessary because patients with these diseases can be satisfactorily treated in the community. Similarly a very large amount of mental illness can be handled in the community without admission to hospital.

Such hospital services as can be afforded for the rural population need to be sited in small units, each serving several villages. In addition, mobile secondary health care service units can be established to visit villages periodically (e.g., weekly or less frequently). Some elementary surgical procedures that cannot be carried out by primary health workers can be performed on a day basis, where adequate postoperative nursing can be provided. Where resources are very limited the maximum amount of health care needs to be provided without incurring the heavy costs of inpatient care.

BUILDINGS

The typical hospital in the more developed countries consists of many floors stacked vertically and is equipped with air conditioning, elevators, batteries of electrical equipment, piped oxygen supplies, and sophisticated supply and communication systems. Many such hospitals have been built without adequate examination of the merits of less expensive alternatives. But, in part, they are a response to the different relative prices of a richer society. One reason for a high-rise building may be the high cost of urban land. Considerable mechanization can be justified economically where labour costs are high; investments in equipment that reduces running costs may be cheaper in the long run. Mechanical equipment can be kept in working order by regular maintenance and repair carried out by staff trained for the purpose. Indeed specialized firms often take on contracts to repair and maintain particular types of equipment.

The economic background of developing countries is very different. Not only are labour costs low but there is substantial unemployment.

The price of land — even urban land — may also be low. Complex mechanical equipment usually has to be imported at a considerable cost in foreign exchange. Skilled personnel for maintenance and repair are usually in very short supply and are badly needed to work in the manufacturing sector. There is not enough mechanical equipment of a particular kind in the country to justify the establishment of specialist maintenance firms, especially since they might have to use foreign labour if skilled local labour is not available. Thus, mechanical equipment that has been installed in hospitals in developing countries is often out of order, awaiting repair or the importation of spare parts. It may also be subject to frequent and dangerous stoppages if the local electricity supply is unreliable or if the power system becomes overloaded through the installation of more electrical equipment than the circuit can bear. A hospital designed to operate with many lifts can be virtually paralysed if most of the lifts are out of order. The emergency staircase is not usually designed for the transport of supplies, let alone patients on trolleys.

A low building will use much more land than a high building but this does not matter if land is cheap. The need for staff to walk from one end of the hospital to the other or to transport supplies does not matter if labour costs are low and bicycles are available. Ramps may be a laborious way of moving supplies and patients but they do not break down and need virtually no maintenance. A further advantage of a low building is that it can be built by traditional methods using local labour and local materials. This greatly reduces the cost of construction and also provides local employment. The building can be sited and constructed in such a way as to maximize natural ventilation and avoid the cost of air conditioning. Purpose-built fixtures can be incorporated rather than imported standard units. The latter are often cheaper than the former in countries where labour costs are high, but they are more expensive to the national economy where labour costs are low and the units have to be imported. In many developing countries steam power is cheaper to install and much cheaper to run than electric power; it is also more reliable as it can be controlled by hospital staff. Furthermore, costs of construction can be cut by using standard plans. Buildings of the kind described can also be easily modified in response to changes in medical technology or to changes in the population served.

Village dispensaries and other simple health buildings can often be built by the local community itself as part of community action programmes. The use of local voluntary labour in construction encourages local interest in the planned health services and participation in the activities promoted from the building after completion.

The system of purchasing supplies on the basis of the lowest tender can often turn out to be an expensive policy in the long run. What is bought may prove to be unsuitable for the conditions in which it will be used. For example, it is not any sheet or blanket that can stand up to the frequent washing involved in hospital use. The key to good purchasing is careful product specification for appropriateness, effectiveness and acceptability, the evaluation of goods in actual use, and ultimately bulk purchasing or contracting.

In view of the difficulties of repairing equipment, items purchased should be reliable, durable, and easy to operate and repair. Consideration must be given to the local climate — particularly to excessive heat and humidity. Staff should be trained to do their own simple repairs to the equipment they use, and this is of crucial importance if they work in remote areas. Spare parts need to be readily available and it is a great advantage if equipment is standardized throughout the country. Frequently, equipment is out of use for long periods while awaiting the delivery of spare parts or supplies. For instance, kerosene refrigerators need regular supplies of wicks and fuel, while microscopes need slides, cedar oil, and stains. Supplies should also be suitable for the conditions in which they will be used. Vehicles for use in rural areas must be able to withstand rough handling and bad road conditions, but it is wasteful to use such vehicles for urban work. For some tasks, hired commercial vehicles can be cheaper than government transport.

The general principle is to buy locally wherever possible so as to save imports. The health services sector, like other sectors of the economy, can be used to encourage the growth of local industry. The first local goods produced may be more expensive than imported goods and the finish may be poor, but both price and quality can be improved with time. Moreover, much can be done by improvising from local materials. For example, laboratory benches can be improvised from locally made tables and from plastic piping, basins, and taps imported cheaply for other purposes. A sterilizer does not need to be chromium-plated, electrically operated, or purpose-built. Many local receptacles can be used to provide a supply of boiling water.

A major cost for health services is that of imported pharmaceuticals. The cost is often so great that not enough are bought and supplies run out, so wasting the skill of trained people. This is an area where considerable purchasing skill is needed to buy wisely in a world market where there are enormous commercial pressures, similar products at widely varying prices, and ineffective and unsafe products of poor quality. A local list of necessary pharmaceuticals needs to be compiled. When

examining tenders for the items on the list, it is essential to be sure that these items are suitable for the conditions in which they will be used.

Developing countries can save imports by developing local processing, which can lead to local manufacture. The first step is local packaging and dosage formulation. A second step may be to arrange for local licensing or contract manufacture with a foreign firm that supplies raw materials and supervises local fabrication.

MAKING STAFF COST-CONSCIOUS

All over the world, health service staffs — even at the highest professional grades — are taught little about the economics of health services and know little about the costs of the equipment and supplies they use. Doctors tend to seek what is new without regard to cost. They are also subjected to considerable sales pressure from manufacturing firms. A cheaper drug or cheaper equipment may give just as good a result for the vast majority of patients. Cost-consciousness is not just a matter for central administrators or planners but should be taught to all those working in health care. More people can be provided with services if no services cost more than is essential to provide the necessary level of care. The price paid for high-cost technology for a few is no technology at all for the many.

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